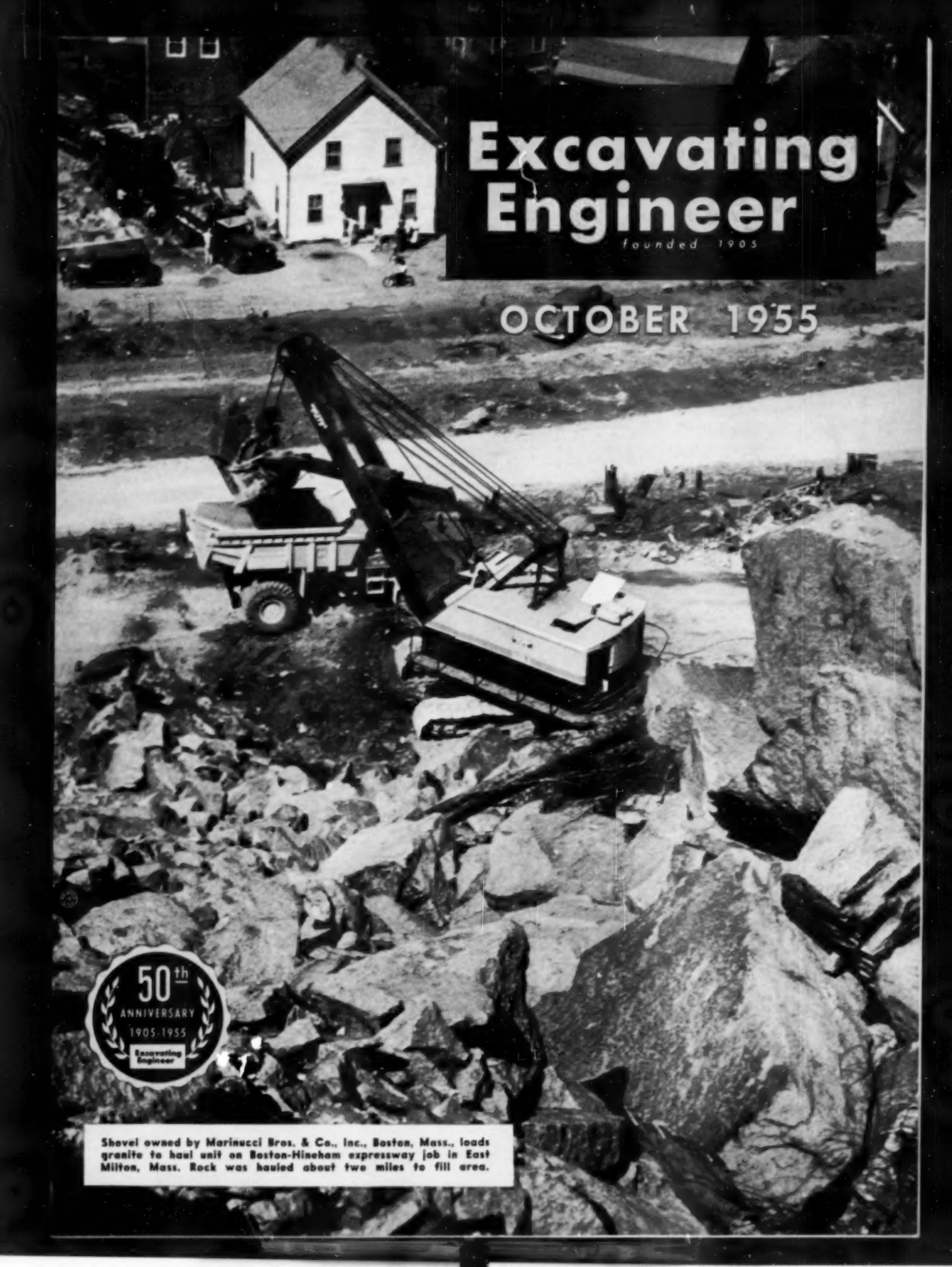
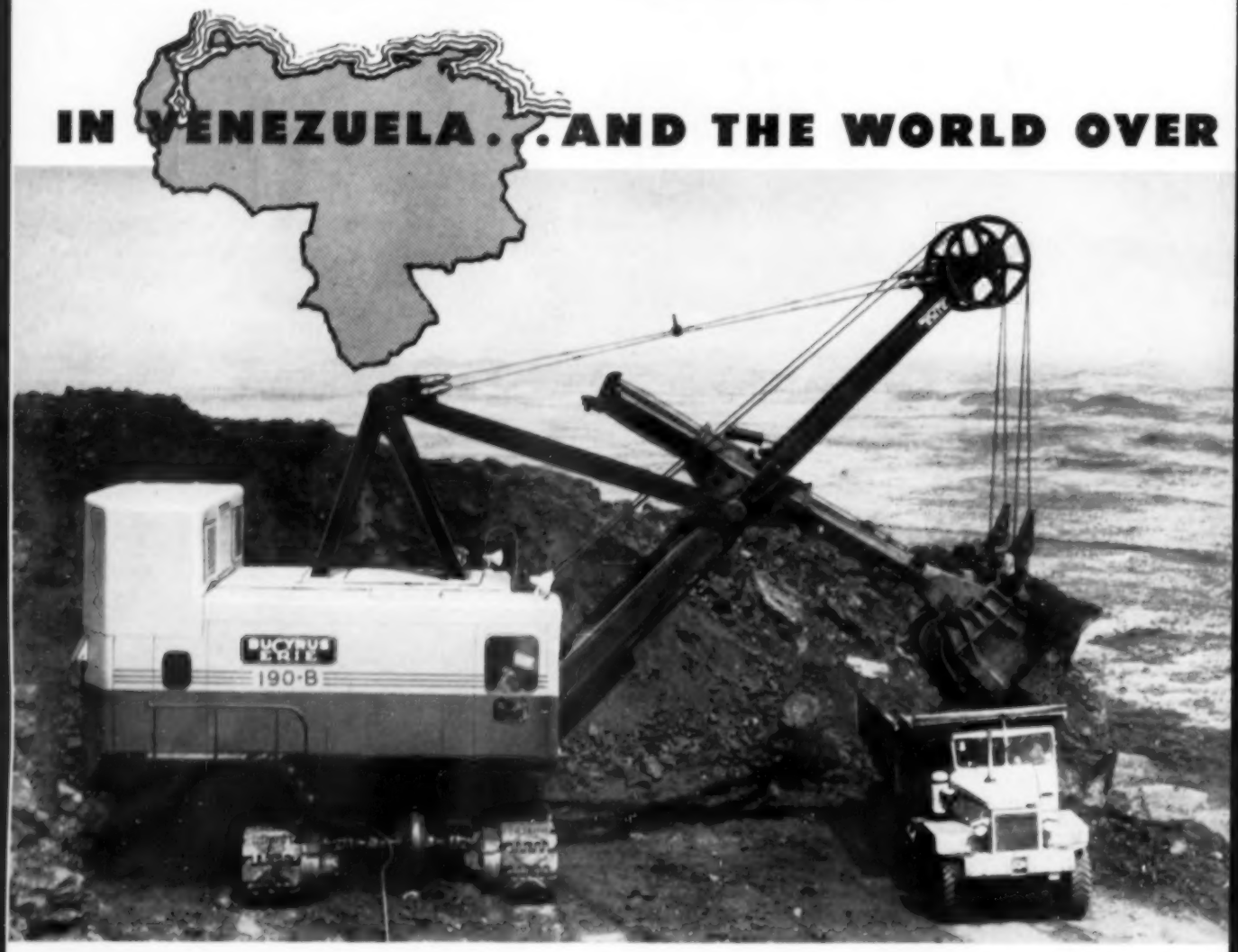


Shovel owned by Marinucci Bros. & Co., Inc., Boston, Mass., loads granite to haul unit on Boston-Hingham expressway job in East Milton, Mass. Rock was hauled about two miles to fill area.



It's Bucyrus-Erie For the Tough Metal Mining Jobs

When the rich iron ore deposits of Cerro Bolivar mountain in Venezuela were discovered, Bucyrus-Erie 190-B shovels were selected to spearhead the job of excavation. Swinging 8-cu. yd. dippers, they keep a fleet of 20-cu. yd. carriers on the move.

The proved superiority of Bucyrus-Erie large-capacity excavators is the result of new front-end design, extra-strong construction, and advanced engineering throughout. Combined with the speed and smoothness of Ward Leonard electric control, these features offer performance that means higher output at the lowest cost per yard.

36L55C

GLOBAL APPROVAL
MOROCCO · PHILIPPINES · RHODESIA · UNITED STATES · VENEZUELA · ALGERIA · CANADA · CONGO · INDO-CHINA · FRANCE · FINLAND · ENGLAND
110-B 4½-cu. yd.
150-B . . 6-cu. yd.
190-B . . 8-cu. yd.
BUCYRUS ERIE

Bucyrus-Erie Company

South Milwaukee, Wisconsin

ADD PUSH... SUBTRACT FUEL!

AiResearch Turbochargers give your diesel far greater power while actually decreasing fuel consumption, noise and smoke!

In mobile diesel engines, where size, weight and fuel capacity must be limited, AiResearch Turbochargers add more power per inch, pound or gallon of fuel than any comparable installation.

An example is the remarkable success achieved in the recent application of these power packages to Caterpillar diesel machinery.

Equally impressive power increases can be achieved in the application of AiResearch Turbochargers to stationary diesel equipment. Here, the outstanding benefits added to the output boost will be lower operating costs and abatement of noise and smoke problems.

AiResearch is the largest producer of small turbomachinery in the United States, with twenty-five *million* hours of experience. This unmatched experience explains why AiResearch Turbochargers lead in power, economy and dependability. Your inquiries are invited.

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND RELATED MACHINERY

S-7 "Euc" Scraper

This "Euc" S-7 is the newest addition to Euclid's Scraper line—fastest growing line in the industry because of customer acceptance and preference. It incorporates many of the features that have made larger Euclid Scrapers tops in production and efficiency . . . and has greater accessibility than any previous "overhung" scraper on the market.

Built to Euclid's standards of rugged construction for long service life, the S-7 is engineered throughout for good accessibility of all major components, for fast loading and travel, and for ease of operation. The entire power train—engine, clutch, transmission, planetary drive axle, etc.—is easy to get at for servicing, repair or replacement. This is a mighty important cost cutting feature in a single axle prime mover.

Before you buy your next small scraper, check the profit making features of the S-7. Your Euclid dealer can show you how this new "Euc" can get more work done at lower cost than any other scraper of comparable size.

POWER and PERFORMANCE

With 143 h.p. this 7 yd. "Euc" has power and performance that's unequalled in small scrapers. . . 20 h.p. for every yard of capacity . . . 18.00 x 25 tires . . . and a top speed of 25 m.p.h. with full payload.

MANEUVERABILITY

Maneuverability—so important for close quarter work—is excellent with the S-7. Full power steering and hitch design of the two-wheel tractor provides a 29 ft. non-stop turning radius. The 18.00 x 25 or 21.00 x 25 (optional) tires have large rolling radius for good traction and flotation.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

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Excavating Engineer

founded 1905

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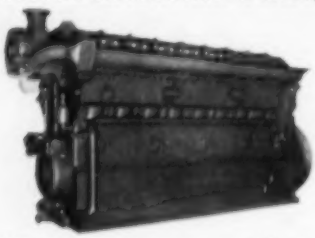
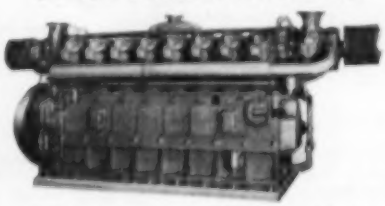
for every heavy-duty power and compressor need

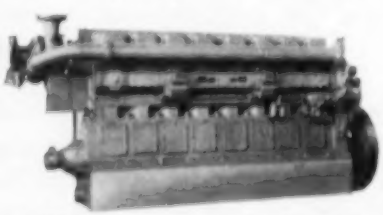
TYPE LSV .....12 or 16 cyl.
Atmospheric and Supercharged
Gas..... 1440 to 5000 hp.
Diesel and Gas-Diesel..1650 to 5000 hp.



TYPE LS .....6, 7, 8 cyl.
Atmospheric and Supercharged
Gas ..... 660 to 2500 hp.
Diesel and Gas-Diesel.. 965 to 2500 hp.



TYPE FVA..... 6, 8, 12 or 16 cyl.
Diesel — Atmospheric .....310 to 835 hp.
Diesel — Supercharged ...560 to 2200 hp.



TYPE JS.....5, 6, 7 or 8 cyl.
Atmospheric and Supercharged
Gas .....325 to 1815 hp.
Diesel and Gas-Diesel....430 to 1815 hp.

TYPE GS..... 5, 6 or 8 cyl.
Atmospheric and Supercharged
Gas .....320 to 1460 hp.
Diesel and Gas Diesel....300 to 1460 hp.

• Available in a range of sizes from 100 to 5000 hp., Cooper-Bessemer engines and compressors are ready to meet *your exact requirements.*

The standard units shown here are typical of the many "top performers" now offered by Cooper-Bessemer. With "Tri Fuel" operation of most 4-cycle engines, and a new line of centrifugal compressors, Cooper-Bessemer continues to put into practice its policy of "Another Example of Efficient Power at Lower Cost".

Here, to list but a few, are plus values that make *every* Cooper-Bessemer a natural choice when it comes to purchasing new engines or compressors . . . low-cost operation, unmatched efficiency, extreme compactness, long-life dependability, easy accessibility, minimum maintenance and more than a century of engine building experience.

New bulletins offer the latest information. Get your copy by writing: The Cooper-Bessemer Corporation, Mt. Vernon, O.

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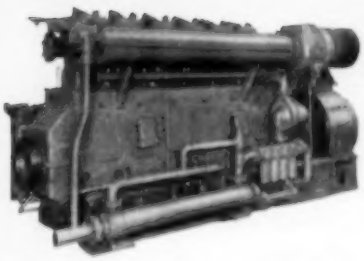
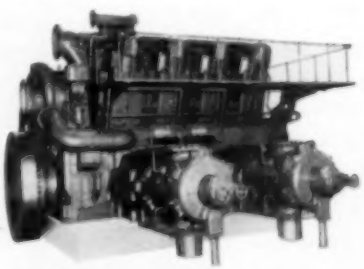
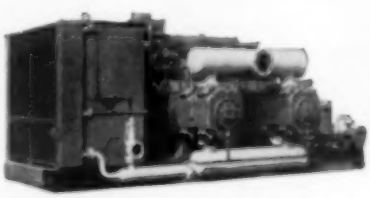


TYPE FWA .....6 cyl.
Diesel — Atmospheric ...245 to 500 hp.
Diesel — Supercharged .420 to 835 hp.

TYPE GMWA.....6, 8 or 10 cyl.
Gas Engine Driven Compressors
.....1500 to 2500 hp.



TYPE GMVA ..... 4, 6, 8, 10 cyl.
Gas Engine Driven Compressors
.....540 to 1350 hp.



TYPE GMXD .....4, 6, 8 or 10 cyl.
Packaged Unit
Gas Engine Driven Compressor . 265 to 660 hp.

M-LINE RECIPROCATING COMPRESSORS
100 to 5000 hp. 9"-14" stroke
Speed to 514 RPM

Inc. Volumes available on microfilm.

IF IT'S A REAL ROCK Shovel-

Any digging is EASY!

● When you have the power for the tough digging you can be sure of greater output in the easy jobs. If it's a real Rock Shovel any digging is easy!

Maybe your immediate problem is loading sand. Maybe you think that's always going to be your problem—loading sand, and you think you can get by with a lighter, less rugged machine.

Remember this! Northwest utilizes force most other independent crowd shovels waste. Watch a Northwest at work. With the Northwest Dual Independent Crowd the Northwest cuts through the bank smoothly without stuttering, without the restarts that delay other rigs. Uniform Pressure Swing Clutches are smooth in action and eliminate the jerks and grabs of ordinary clutch designs, assuring accurate spotting without waste of time or excess spillage. The "Feather-Touch" Clutch Control gives the *feel of the load* and simple mechanical design eliminates the complications of pumps, compressors, valves and tubing. Simplicity of design results in ease of upkeep and reduced down time and combines with other Northwest advantages to give high output that pays out profitably whether your digging is tough or easy.

NORTHWEST ENGINEERING COMPANY
1506 Field Building • 135 South La Salle Street • Chicago 3, Illinois

SHOVELS
CRANES
DRAGLINES
PULLSHOVELS

NORTHWEST

YOU CAN'T HAVE
NORTHWEST
ADVANTAGES
UNLESS YOU OWN

IMPOSSIBLE WITHOUT EXPLOSIVES

On a mountainside in West Virginia, overburden up to 80 feet in height—sandstone, shale, and slate—is blasted with the correct type of Hercules® dynamite to uncover seams of coal 7 ft. thick. Speedy, economical shovel-loading operations are maintained by loosening the coal with small charges of explosives.

Hercules has long pioneered in developing explosives for every type of project. Our experience and service facilities can help you solve blasting problems in mining, quarrying, construction, seismic explorations—wherever explosives are needed to get a job done.

HERCULES POWDER COMPANY

Explosives Department, 972 King Street, Wilmington 99, Delaware

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Calif.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Calif.

HERCULES

This Torcon-equipped dragline gets more work by the bucket with less work by the engine.

Self-contained oil circuit keeps TORCON efficiency high

This simple design feature is a big factor in keeping TORCON efficiency consistently high: the oil sump is an integral part of the housing—no complicated oil seals to lessen efficiency and complicate maintenance. Oil passages are cored in the housing—no extra hoses and fittings.

Easy accessibility is valuable, too. Simply remove two cover-plates, and the whole unit is fully exposed for inspection and service—no special tools needed.

The Clark-Torcon is a complete unit, mass-produced, available off-the-shelf to engine and original equipment manufacturers, and to owners and operators. It's the broadest line available to industry, with a wide range of wheel diameters and a complete choice of options, for easy fitting into any torque-transmission system.

There's a Torcon to FIT YOUR NEED

This fully illustrated, easy-to-read bulletin explains torque multiplication clearly; and indicates its many industrial applications. Use the coupon to get your copy.

A Complete Quality Line—Clark-Torcon

All Sizes—from 15 to 600 H.P.

Broad Range of Options—readily adaptable to many applications

No Cavitation—proper oil flow prevents turbulence and formation of air pockets to cause wear and loss of efficiency

High Efficiency over wide range—more work done, and reduced wear on components

Individually Cast One-Piece Elements—no welds or fabrications to distort under extreme loads

SCHNEIDER SYSTEM

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY, Jackson 5, Michigan: Please send the CLARK-TORCON Bulletin

Name_____ Position_____

Firm_____ Address_____

City_____ Zone_____ State_____

Bigger, faster loads with the new LOWBOWL SCRAPERS

18 CU. YD. STRUCK
25 CU. YD. HEAPED

How Caterpillar's new, exclusive LOWBOWL design pays off for you!

Compare these two scrapers – the new No. 470 with LOWBOWL design and the sideboarded No. 21.

Both scrapers were loaded with the same material under identical conditions.

Result: the No. 470's net load weighed 5000 pounds *more* than the load in the No. 21–which is a profitable margin in favor of LOWBOWL design.

The LOWBOWL concept features a bowl that has been widened and lengthened, and bowl depth has been decreased. Incoming material, meeting less overhead weight and internal friction, is loaded with less resistance clear out to the end of the loading cycle.

Result: faster loading for LOWBOWL design. Both the No. 470 and No. 456 feature this new concept in scraper engineering.

New No. 470 Scraper (left) with 5000 pounds more load than sideboarded No. 21 Scraper (right).

"BIG PRODUCTION" FEATURES

MORE POWER—300 HP at 1800 r.p.m. Ten per cent more rimpull. New 6-cylinder Cat Engine. Requires only one operating adjustment. Fan-belt tension regulated by convenient setscrew-adjustment of generator.

NEW TURBOCHARGER, driven by engine exhaust, utilizes energy which would otherwise be lost. Packs air into engine according to engine load, not speed. Delivers more working HP—greater performance.

NEW, BIG WIDE-SECTION 29.5-29 TIRES, developed after 3 years of Caterpillar and tire manufacturer research on actual earthmoving jobs, operate at lower pressures and provide greater flotation and traction.

LARGE AREA PUSHBLOCK gives better pusher contact, faster loading.

More power, bigger capacity in the new DW20-DW21 TRACTORS

300 HP

THE NEW FOUR-WHEEL CAT® DW20 Series E with new No. 456 LOWBOWL Scraper. Also available with the new W20 Wagon; capacity—20 cu. yd. struck. The new two-wheel DW21 Series C is available with the new No. 470 LOWBOWL Scraper.

In the DW20 Series E and DW21 Series C, Caterpillar offers you two new tractors and matched scrapers with exclusive LOWBOWL design.

Replacing the DW20 and DW21, world-famed earthmoving pace-setters, these new machines are built to deliver a new standard of money-making performance.

Their new LOWBOWL design utilizes maximum tractor and pusher power for bigger loads, faster loading times. Their greater power means faster cycles.

For complete facts, see your Caterpillar Dealer!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NEW DW20-DW21, LATEST EXAMPLES OF LEADERSHIP IN ACTION

OF THE NEW DW20-DW21

INCREASED HIGH APRON LIFT provides faster ejection of any material.

INCREASED SCRAPER GROUND CLEARANCE enables units to work even under extremely "soft" conditions.

HIGH SPEEDS FOR FAST HAULS
DW20 Series E, 2.8 to 32.1 m.p.h.
DW21 Series C, 2.3 to 28.5 m.p.h.

CHOICE OF STARTING METHODS, optional 24-volt direct electric or gasoline starting engine with 6-volt starting motor.

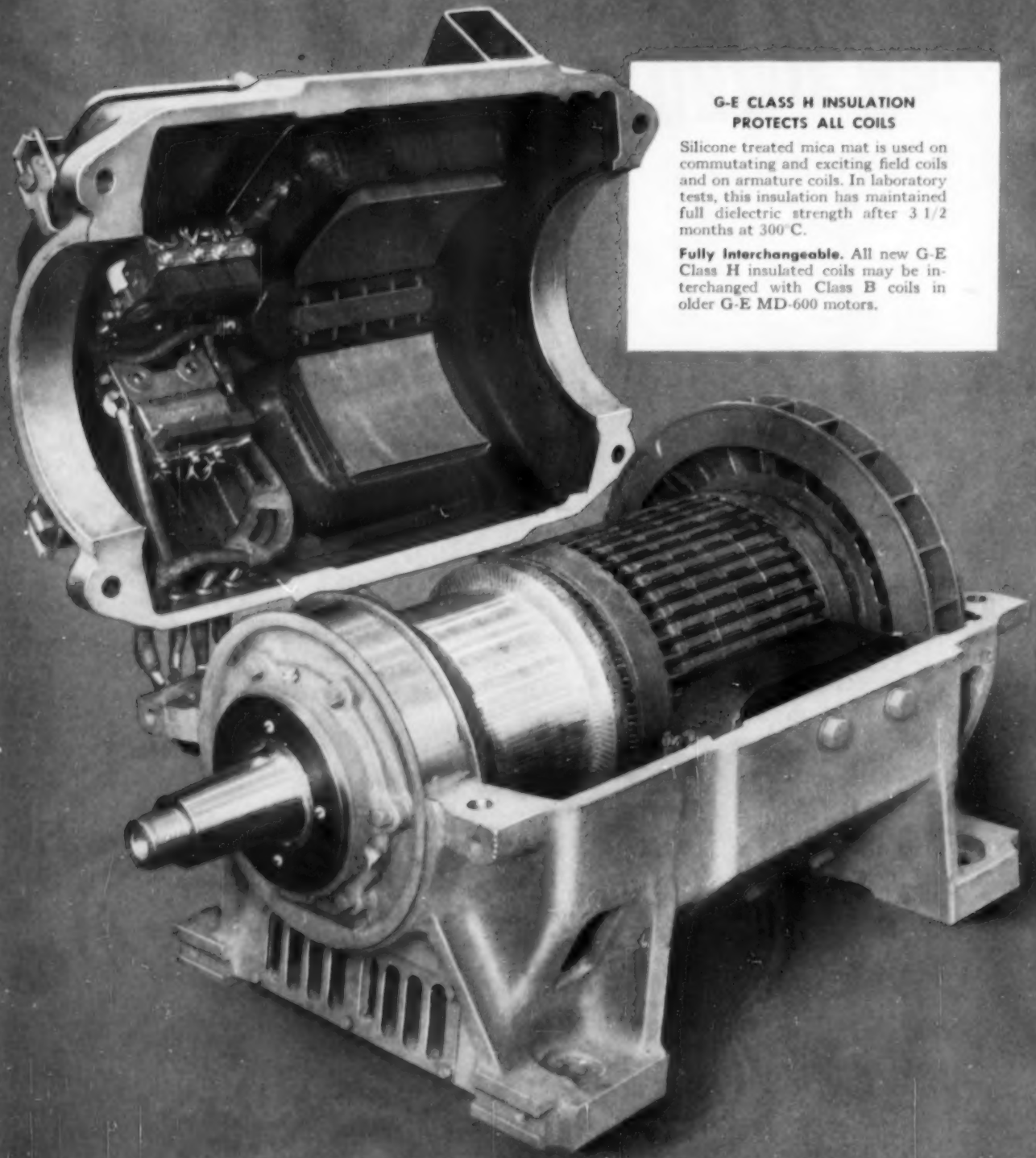
AUTOMATIC CABLE SAVER, standard equipment.

PLUS IMPROVED BRAKE CONTROL, more easily removed DW20 hitch arrangement, better protected DW21 hydraulic steering system and many other new and thoroughly tested Caterpillar features.

PROGRESS IN
DIRECT-CURRENT DRIVES

NOW! Roastouts

NEW G-E MD-600 MOTORS



G-E CLASS H INSULATION PROTECTS ALL COILS

Silicone treated mica mat is used on commutating and exciting field coils and on armature coils. In laboratory tests, this insulation has maintained full dielectric strength after 3 1/2 months at 300°C.

Fully Interchangeable. All new G-E Class H insulated coils may be interchanged with Class B coils in older G-E MD-600 motors.

Virtually Eliminated on . . .

WITH CLASS H INSULATION

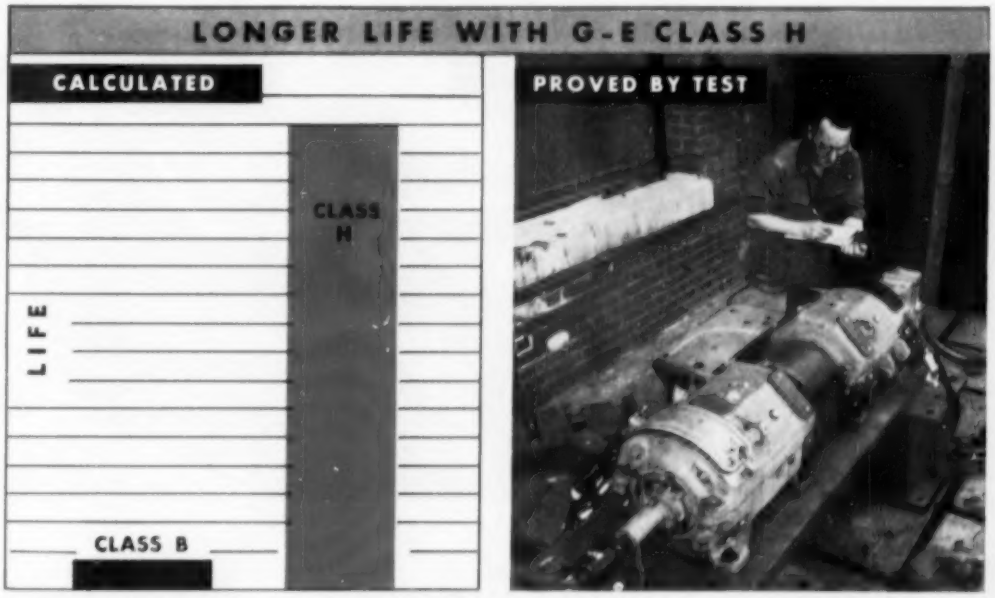
G.E. offers—in all MD-600's—Class H Insulated Coils

WHAT IS CLASS H? General Electric research has developed a combination of inorganic and silicone materials for a new insulation system now used in all MD-600 motors. These Class H materials will withstand temperatures up to 180°C continuously.

BETTER FOR HEAVY DUTY. Auxiliary mill motors often encounter unexpected high ambient temperatures, unforeseen extended duty or emergency conditions. Any one of these can cause "roastouts" from temperatures higher than the insulation capacity. The new G-E Class H insulation will resist up to 50°C more than Class B, resulting in longer motor service.

REWINDS ELIMINATED? On normal duty, insulation failure may be eliminated as the limiting factor in continuous armored motor service. Engineers calculate that each 10°C rise in temperature reduces the life of a given type of insulation by half. *Since G-E Class H will withstand 50°C higher than Class B, its life* **at the same temperature** *should be increased 2^5 or 32 times!*

YOUR G-E SALES REPRESENTATIVE HAS COMPLETE INFORMATION. Contact him at your nearby G-E Apparatus Sales Office, or write Section 812-1, Direct Current Motor and Generator Department, General Electric Company, Erie, Pennsylvania.



ENGINEERING STUDIES indicate that under identical operating conditions new G-E Class H insulated coils in MD-600 motors will last up to ***32 times*** as long as conventional Class B coils. Insulation failure may be eliminated as the limiting factor in continuous auxiliary mill motor service.

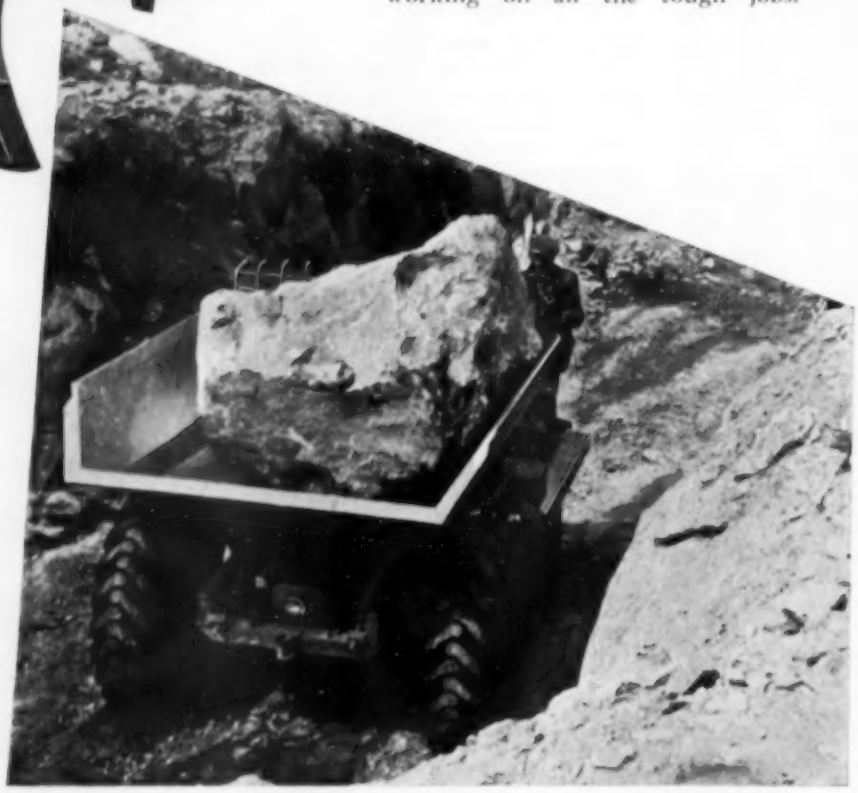
ACTUAL TEST with Class H and Class B motors coupled together ***proves to date*** the new insulation will last more than twice as long as the old. After burning out two Class B insulated motors, the one with Class H coils is still operating under exaggerated load, vibration and atmospheric conditions.

Progress Is Our Most Important Product

GENERAL ELECTRIC

IMPACT!

A couple of tons, maybe more . . . . . dropped from almost four feet — smack into the hopper. A practice not to be recommended but occasionally unavoidable. It is to guard against treatment such as this that the Aveling-Barford 4½ yard Dumper is so robustly constructed. It is built to take punishment, and does — that's why you will find it working on all the tough jobs.



One of a fleet of Aveling-Barford 4½ cu. yd. Dumpers working at the Breadalbane Hydro-electric Project; North of Scotland Electricity Board. Contractors: James Millar & Sons Ltd.

AVELING-BARFORD

4½ cu. yd. SHUTTLE DUMPER

AVELING-BARFORD LIMITED • GRANTHAM • ENGLAND

Extra Reach with a Feather Touch

NEW ½-Yard, 9-Ton H-5 HYDROCRANE

The new H-5 Hydrocrane combines 50 feet of maximum boom length, plus a 20-ft. extension jib, with all the work advantages of smooth, precise hydraulic control — all the travel advantages of a conventional motor truck. In addition, boom extends and retracts hydraulically within a 12-ft. range — while crane is working. With this machine you can erect beams, concrete planking, stone facing, etc.; hoist fragile objects, maneuver in close quarters, with a smoothness and safety never before possible in the 50-ft. boom range.

NEW FLEXIBILITY, NEW ROADABILITY

Patented outriggers permit you to mount crane on a new or used commercial truck *of your choice*. You can select a heavy tandem truck for maximum flotation on off-the-highway work, a lighter truck for fast between-job travel, or a truck that answers a number of needs and still meets highway laws for over-all length and axle loads. Both the high-lift 50-ft. boom and the standard 36-ft. boom retract to 25 feet for travel. Maximum over-all length, depending on truck, is under 35 feet.

Find out how the new H-5 Hydrocrane can speed your jobs, increase your profits. Write today for new literature or see your Bucyrus-Erie distributor for a demonstration. 108H55C

Here the new H-5 Hydrocrane erects steel for a new building. Every crane function fully hydraulic — boom and line hoist, swing, outrigger set and retract, boom telescope, bucket open and close. Crane travels up to 50 mph on highway, has up to 240 fpm line speed, is available with clamshell, crane hook, magnet.

BUCYRUS ERIE
South Milwaukee Wisconsin

1880 75 1955
YEARS OF SERVICE to Men Who Shape the Earth

Like these contractors, you can

Bid lower- Finish jobs faster- make more per contract

SPECIFY
GENERAL MOTORS DIESEL POWER

In <u>all</u> your construction equipment

"Works faster... burns less fuel... costs less to maintain."

That's what these contractors—operating *seven* different kinds of General Motors Diesel-powered equipment—report about their GM Diesels. They've got on-the-job proof that a GM 2-cycle Diesel does more work at less cost on every construction job.

If your business is building anything from sewers to skyscrapers, you'll find a good way to build your business is to *specify* a GM Diesel when you buy equipment.

For this quick-acting 2-cycle Diesel accelerates faster under load, burns fewer gallons of low-cost fuel, stands up better even in toughest working conditions. You won't need service often but, when you do, your GM Diesel distributor backs up engine performance with fast service and quick delivery of low-cost parts, no matter where your contracts take you.

Today you can get GM Diesel power in over 750 different models of equipment built by more than 150 different manufacturers. Get their names from your local GM Diesel distributor or write direct for the list.

25% MORE WORK AT HALF THE FUEL COST

California contractors McGuire & Hester report they're getting 25% more work—and spending 50% less for fuel—since they converted this ¼-yard dragline from *gasoline to General Motors Diesel power*. The compact "4-71" GM Diesel did such a good job that the contractor repowered two more shovels with GM Diesel.

GM
GENERAL MOTORS
DIESEL POWER

WORKS ⅓ FASTER—CUT FUEL COSTS 60%

Maryland contractor Charles F. Knox, Jr., reports he gets ⅓ more production, has cut fuel costs 60%, since he converted this ¾-yard shovel from *gasoline to GM Diesel power*. The shovel works 8 to 10 hours a day, costs far less to maintain. You can specify GM Diesel power in over 50 shovel models built by more than 20 manufacturers.

PAVES 1400 FEET A DAY

This Koehring Paver, powered by a compact, quick-accelerating GM 2-cycle Diesel, lays 1400 feet of 25-foot wide pavement per day for the Austin Road Company of Dallas, Texas. You can lay pavement faster and at less cost with GM Diesel power—available as original equipment in 8 paver models made by 4 different manufacturers.

"FASTEST DITCHER IN THE AREA"

McGuire & Hester *specified* GM Diesel power in two new Buckeye Ditchers and a Lorain Crane, as well as repowering a Hough Payloader, after getting *more work at less cost* with GM Diesel power in their dragline. The master mechanic calls this GM Diesel-powered Buckeye Ditcher "fastest in the area."

NO REPAIRS IN TWO YEARS

These GM Diesel-powered LeTourneau-Westinghouse Tournapulls worked over two years in flying abrasive dust without losing a day for repairs, reports Arizona contractor Link L. Colvin. In every kind of earth-moving equipment GM Diesel power lasts longer, works faster, costs less to run and maintain.

DETROIT DIESEL ENGINE DIVISION

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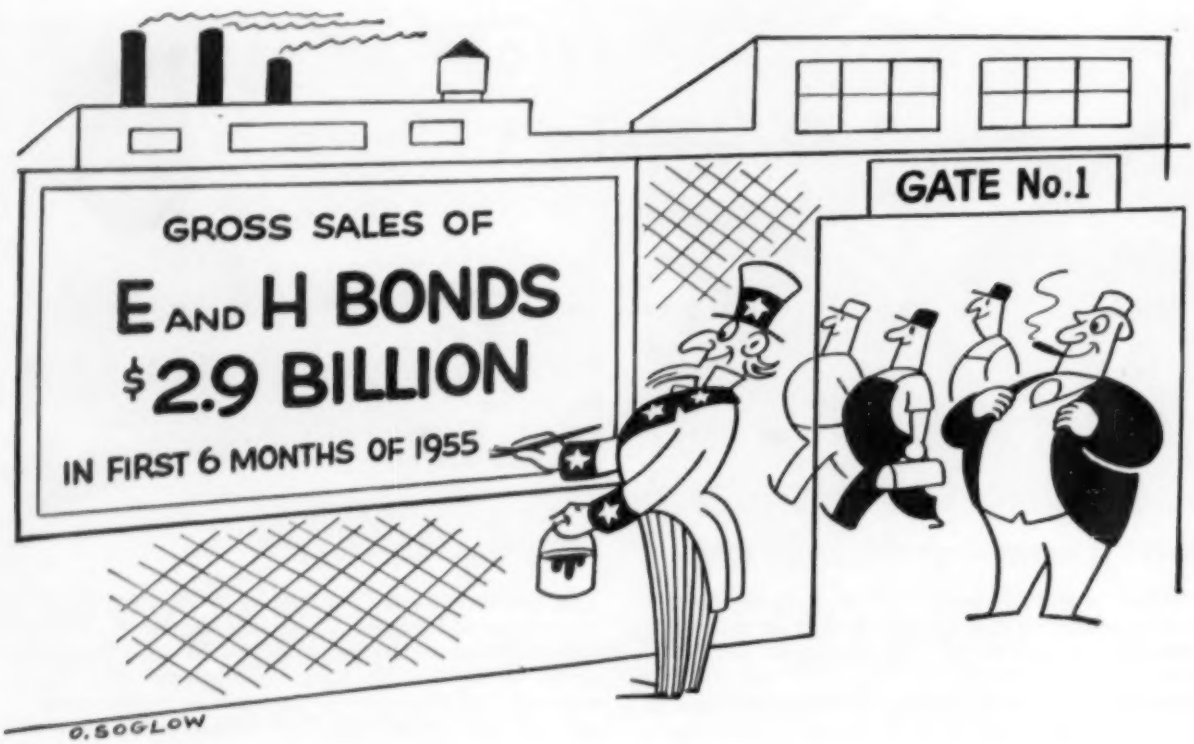

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EXCAVATING ENGINEER

"why do you insist on ESCO buckets?"

"Service plus dependability"

says James E. Shroyer, Plant Manager, Auglaize Stone Company Oakwood, Ohio

"An example of *ESCO* service would be the cooperation we received on a special problem caused by handling a 3300-lb. steel ball to crack large rock," said James E. Shroyer. "In 1948 *ESCO* designed us a special bucket to handle the drop ball. Since then we have never had any serious trouble. The service on that problem helped sell us completely on *ESCO*." Auglaize Stone Company is one of the largest suppliers of stone aggregate to prime contractors in northwestern Ohio.

If you have a bucket problem, see your *ESCO* dealer or write direct.

This ESCO Dipper has handled a 3300 lb. steel ball many thousands of times without breakdown

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1 Koehring 304 ¾-yd. shovel with ESCO ¾-yd. Dipper.

2 Lima Type 2400 Shovel with ESCO 4-yd Dipper.

3 P & H Model 655B Shovel with ESCO 1½-yd. Dipper.

4 Lorain 2-yd. Backhoe with ESCO 60" "Fastback" Hoe.

5 Link-Belt 365 with 2½-yd. ESCO Coal Loading Dipper.

6 Marion 362 with 1¼-yd. Bucket.

7 Manitowac 3500 with 2½-yd. ESCO Di

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"GREAT" for all-around utility work

says Supt. on Garden State Parkway contract

On their 14 mile section of the Garden State Parkway in Cape May County, New Jersey, Public Constructors, Inc., Pleasantville, are using a 19 mph rubber-tired Tournatractor for all-around utility work.

This 208 hp tractor works all over their widely-scattered 2¼ million-yard sand job. It often moves ahead of the company's 33 scrapers to clear trees and brush and handle pioneer dozing. At times, it is used to level cuts and fills and to doze around bridges and culverts. Because of its speed and maneuverability, tractor-on-rubber performs these utility assignments without interfering with production dirtmoving.

Besides leveling work, Tournatractor is also used to push-load some of the contractors' 11 C Tournapulls. Where material is pure white sand, tractor's fast pusher-service loads the 16-yd. "C's" in as little as 45 seconds.

Used for other scattered jobs

Tournatractor is always ready for emergency calls, too. Jobs 5 miles away can be reached in 20 minutes (or less) due to its 19 mph speed. Cleaning haul roads and dozing fill on distant sections of the job are handled quickly and efficiently. Paved highways present no travel problems for the tractor-on-rubber. It goes everywhere under its own power . . . needs no blocking, planking, trailer-loading and unloading. For all around utility service, it "gives a great performance day after day," says Supt. John Franks.

Discover for yourself why the fast, mobile Tournatractor is ideal for utility-type assignments, as well as major tractor work. Phone or write for a demonstration on your job, today. There's no obligation.

Tournatractor, Tournapull—Trademark Reg. U.S. Pat. Off. T-837-H-b

Tournatractor, with its 4-wheel drive, push-loads 16-yard C Tournapull in 45 to 60 seconds. Big low-pressure tires provide plenty of traction and flotation even in this poor, sandy footing.

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

TIMKEN® bearings forestall costly repairs

ON this 150-B shovel, as on practically all large and heavy earth-moving equipment, costs of replacing a bearing would often be out of proportion to the cost of the bearing itself.

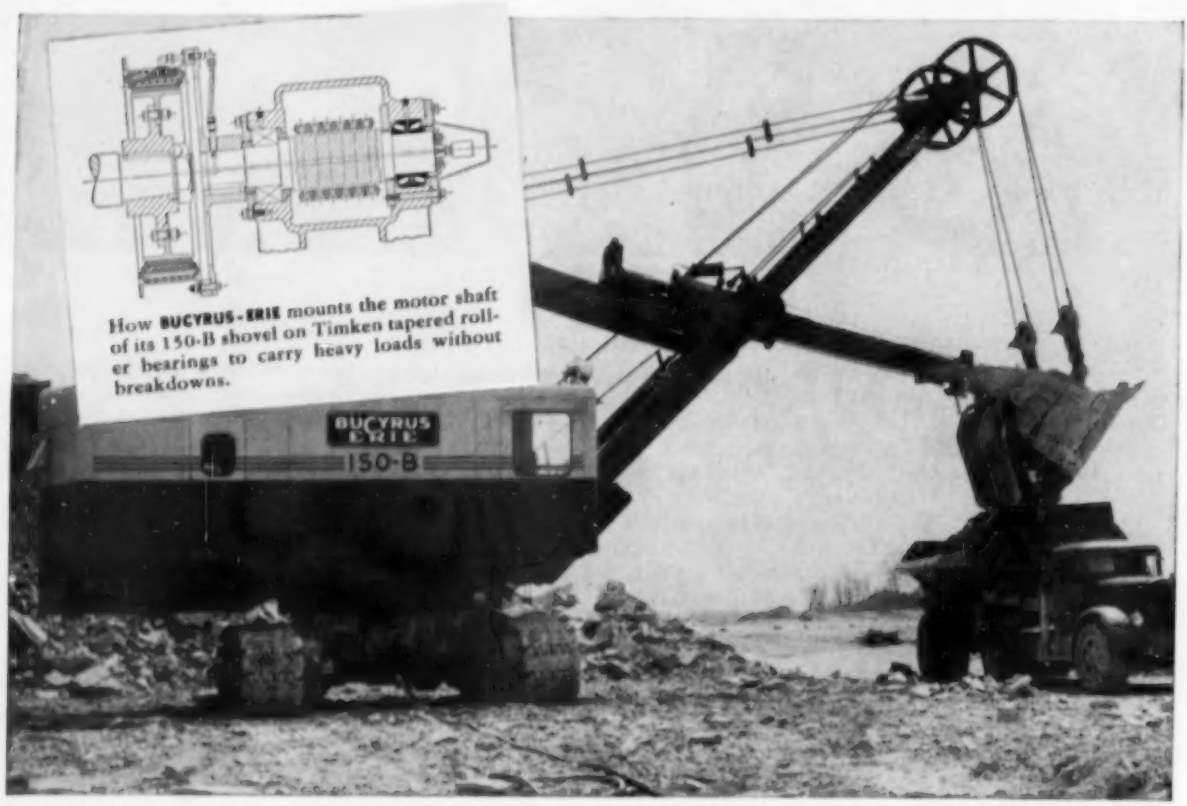
Alert to this, Bucyrus-Erie engineers mounted eight vital shafts on bearings that can normally be counted on to outlast the machine itself, even in the toughest applications. Timken® tapered roller bearings!

In Timken bearings, the load is carried on a line of contact between rollers and races. That means they provide extra load-carrying capacity. And since Timken bearings are tapered in construction, they can take any combination of radial and thrust loads.

Timken bearings keep housings and shafts concentric, make closures more effective. Dirt and moisture stay out, lubricant stays in.

Since no bearing is any better than the steel that goes into it, we make our own to insure top quality. No other bearing company in the country does. Whether you build or buy construction machinery, always specify Timken bearings. No other bearing rolls so true, has such quality thru and thru. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **BUCYRUS-ERIE** mounts the motor shaft of its 150-B shovel on Timken tapered roller bearings to carry heavy loads without breakdowns.

TIMKEN

TAPERED ROLLER BEARINGS

IT'S TIMKEN BEARINGS FOR VALUE!

To get the best value in bearings you may find this simple formula helpful:

$$Value = \frac{quality + service + public\ acceptance}{price}$$

Obviously a big advantage *above* the line gives you more value than a small one *below*. No other bearing can match the uniform high quality, engineering and field service and overwhelming public acceptance you get with Timken bearings.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▷ BEARING TAKES RADIAL ◫ AND THRUST →◫← LOADS OR ANY COMBINATION

Beats winter shutdown

with 2 C Tournapulls . . .

How good are Tournapulls for bad weather work? Here is a report of one contractor's answer:

Winter was closing in when R. Marino Construction Co., Delavan, Wis., contracted to move 30,000 yds. of clay on grading of factory site near Milwaukee. To lick the job in a hurry, they drove 2 C Tournapulls from Janesville . . . made the 70-mile trip over busy highways in 3½ hours.

Self-load in topsoil

Crawler-pusher, which was being hauled in from Janesville, had not yet arrived when the Tournapulls reached the job. To save time, Tournapulls self-loaded to strip topsoil from the 700 x 515′ site. They averaged 7 pay yards per load. "Very satisfactory output for self-loading," said Company President Bob Marino.

Production increased, of course, when Tournapulls had pusher assistance. One "C" averaged 12 pay yards per load; the other, with built-up scraper, averaged 13½ pay yards. Time studies made on typical 650 to 1000′ cycles show each machine delivered 15 loads per 50-minute hour. Combined hourly production was 382 pay yds. Contractor reports each C Tournapull moved as much as 21 to 24 loads per hour on similar cycles when working conditions were ideal.

Haul 362 yds. hourly

With this rate of production, Tournapulls completed entire job in 83 working hours. This includes 10 hours of self-loading, 2 days (out of 10) of below-freezing temperatures (down to 5°), and 7 days with some rain or snow. Output for all conditions averaged 362 pay yards per hour for the 2 units.

Like Marino Construction Co., you will find Tournapulls deliver at lowest-net-cost-per-yard under any working conditions. Ask for all the details. There's no obligation.

How Marino set up his job to lick some common problems

Why he selected Tournapulls

"We took this job late in the year," Marino explains. "It was important to get the dirtmoving done fast so the fill had a chance to settle over winter. We knew that if we could get good, dependable equipment in there, we'd be all right. After seeing and hearing about hundreds of jobs, I had a pretty good idea what the Tournapulls would do. I knew, for instance, they could lick many tough conditions. I didn't know what other machines would do, so why shop around and take a chance on other equipment? So Tournapulls it was — and they worked out fine!"

How he removed trees

After stripping topsoil, two large trees had to be removed from the site. One was on old oak 2′ in diameter. First, Tournapulls cut around the base to sever the long roots. Then, operators attached a cable to the tree and one of the "C's" pulled it over. For disposal, the 2 Tournapulls and the crawler dragged it up a steep hill.

Prevention of freeze-up

Marino explains, "Instead of grading evenly along whole cut, we shelved it. This way all of it wouldn't freeze in case of bad weather."

Work after rains

Says Marino, "I'm convinced that every day Tournapulls are being used in more places where you wouldn't think they could work. For instance, we moved dirt right after heavy rains. The Tournapulls just skimmed off a layer or two of mud and then got rolling."

Compaction without rollers

Property owners, C. Hennecke Co., requested compaction comparable to making 6 passes over each 6″ layer of fill with a sheepsfoot roller. Marino promised that compaction through proper use of rubber-tired machines. "We told them we'd level the fill with the motor patrol as the Tournapulls dumped each load. We assured them they'd get good compaction because the machines would be rolling over it constantly. We did that and their engineer said compaction was perfect. So, by using Tournapulls, we saved cost of having another tractor and a roller . . . and Hennecke Co. got the job done cheaper and just as well."

Tournapull—Trademark Reg. U.S. Pat. Off. P-623-8-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Excavating Engineer
founded 1905 OCTOBER, 1955

Top of bank is cleared for drilling by an International TD-24 dozer. Hole at the extreme right is the diversion tunnel exit.

ICA Builds the Zicuiran Dam

by Mary Saint Albans

RISING in what was one of Mexico's inaccessible and backward regions is the Zicuiran Dam, a large rock fill structure that will raise the standard of living for residents of that area in the state of Michoacan.

The dam, across the Zicuiran River, will require 240,000 cubic meters of rock. The structure will be 43 meters high, 152 meters long, 243 meters wide at the base and 20 meters wide at the crown. The upstream side and crown of the dam will be faced with reinforced concrete. Another 50,000 cubic meters of rock will be excavated for the concrete spillway.

The dam is scheduled to be completed by the end of 1956. The basin will hold 50 million cubic meters of water for irrigation of 12,000 acres of rich soil on which two crops are raised yearly under a hot sun. With prices for tropical products high, the dam and its irrigation canals are expected to pay for themselves within two years.

Associated Civil Engineers, or ICA, a company organized by 50 men before their graduation from the engineering school of Mexico University, is constructing the Zicuiran Dam for the Commission of Tepalcatepec.

The Commission of Tepalcatepec is one of four government commissions reclaiming great areas of idle lands in the states of Michoacan, Veracruz, Sinaloa and Tabasco. The other commissions are: Papaloapan, which built the President Aleman Dam the first on the Papaloapan River, El Fuerte, in Sinaloa; and Grijalva in Tabasco.

Under these commissions, Mexico's food supply has increased markedly and the standard of living of many thousands of persons has been raised. Construction of roads, schools, power plants, hospitals, agricultural experiment stations and water and drainage facilities has kept pace with the opening of these lands to cultivation.

Large rock fill structure is scheduled to be completed by the end of 1956. It will raise standard of living for residents in a former backward region of the Mexican state of Michoacan.

Less is known of the Commission of Tepalcatepec than the other commis-

If figures in meters, kilometers and grams are unfamiliar, you can convert them by using the table below:

240,000 cu. m.	=	313,920 cu. yds.
50,000 cu. m.	=	65,400 cu. yds.
40,000 cu. m.	=	52,320 cu. yds.
5,000 cu. m.	=	6,540 cu. yds.
3,000 cu. m.	=	3,924 cu. yds.
43 meters	=	141 feet
153 meters	=	502 feet
243 meters	=	797 feet
20 meters	=	66 feet
150 meters	=	491 feet
11 meters	=	36 feet
230 meters	=	755 feet
5 meters	=	16 feet
251 meters	=	824 feet
50 kilos.	=	31 miles
150 kilos.	=	93 miles
500 kilos.	=	311 miles
60 kilos.	=	37 miles
30 kilos.	=	19 miles
17 kilos.	=	11 miles
55 kilos.	=	34 miles
18,000 sq. kilos.	=	6,950 sq. miles
650 grams	=	1⅓ pounds

Note: 1 cubic meter equals 1.308 cubic yards; 1 meter equals 3.281 feet; 1 kilometer equals .6213 miles. 1 square kilometer equals .3861 square mile; 1 pound equals 453 grams.

One of four Thor wagon drills on the job goes to work on the bank. A Le Roi 600 compressor, powered by a Caterpillar D13000 diesel, supplies drill with compressed air.

sions because it is autonomous and has no offices in Mexico City. Its activities embrace an area of 18,000 square kilometers in the basin of the Tepalcatepec River and its tributaries, comprising the central part of Michoacan and a small portion of southern Jalisco.

Many progressive changes have occured in Michoacan and Jalisco in the last eight years. Since 1949 much of the work has been done by ICA. For the Tepalcatepec Commission, ICA has completed 50 kilometers of canals and 150 kilometers of roads and has built dams, giant-sized siphons, bridges and the Cobano electric plant which furnishes power to three states. ICA's biggest job at the moment in Michoacan is the Zicuiran Dam.

Elsewhere, ICA has dug 100 miles of canal in the Papaloapan area and currently is working in the wilds of Puebla on what is claimed will be Latin America's largest hydroelectric plant.

To reach the dam site from Mexico City, travel 500 kilometers to Uruapan,

A pair of Euclids is being loaded by two shovels. A Link-Belt K360 deposits its load (left), as does the Bucyrus-Erie 54-B.

headquarters for viewing the now extinct Paricutin volcano. Motoring another 60 kilometers over the Uruapan-Apatzingan highway (built by ICA) leads to Cuatro Caminos (Four Roads). To the right, one proceeds 30 kilometers to Apatzingan, headquarters for Zone 1 of the Tepalcatepec organization. Apatzingan is a beautiful tropical town, planned by the Commission.

Straight ahead is the town of Arteaga and the Pacific Coast. The road is graded for 17 kilometers. Now it takes 12 hours to reach the Pacific Ocean; later four will suffice. ICA has built or is building the four roads which converge at Cuatro Caminos.

Lack of Funds Delays Work

Perez Rubio, the commission administrative chief, the ICA paymaster and I, driving a Ford pickup, turned left at Cuatro Caminos to take the semi-trail 30 kilometers to the dam. Before last March, only humans on foot, horse or burrow could have traveled the trail. We were on the road a few minutes when we saw a Caterpillar D7 tractor working on a culvert. Lack of government funds, however, had slowed progress on this and the coastal road.

The first heavy downpour of the season had thoroughly drenched the countryside the previous night. A fog hung low as far as we could see. Twice our pickup stuck in the mud, followed by the usual struggle with branches, sticks and hand pushing to get us traveling again.

We crossed the 150-meter wide Marquez river on a low wooden bridge which had been hastily flung together three months before. To the left of the bridge, about a block away, we saw the steel false work of a concrete bridge in construction. The bridge will not be ready until fall.

Later, we forded the Zicuiran river at a spot where it was wide and shallow. Here a dozen men were building a gravel and rock crossing over a culvert. The culvert was made of parallel strings of empty gasoline tanks, welded together after removal of the ends. Such culverts, strong and cheap, are highly regarded in this region.

The camp was a motley array of adobe and frame structures. Members of ICA's permanent staff—engineers, foremen, operators, technical repair men—

A 1¼-yd. Manitowoc shovel loads to a Euclid. Tunnel exit is in background. The Zicuiran Dam, in the state of Michoacan, is scheduled to be completed late in 1956.

Euclids wait to dump while an International TD-24 dozer cleans up. Dam is being built by the Associated Civil Engineers, or ICA.

previously had stayed in Cobano, traveling back and forth to Zicuiran. Later, temporary frame buildings at Cobano were dismantled, trucked to Zicuiran and nailed together again. When we visited Zicuiran, 12 or more adobe buildings, cool in a hot season that lasts almost the entire year, were being completed at a cost of 40 cents a square meter. A long shed of bathroom fittings waited installation.

Native laborers began clearing the trail from Cuatro Caminos to Zicuiran in February 1955. An International TD-24 dozer later completed the job. This tractor, the first machine on the job, later began to clear the dam location. The next day a Chicago Pneumatic compressor arrived on a truck. The compressor powered the five Gardner-Denver 55 air drills which attacked rock to a depth of four meters.

While trucks move in to haul away the diggings, shovels attack the hillside. A Le Roi compressor is in the foreground. The dam will require 240,000 cubic meters of rock.

Shovels Take Trail

A 1½-yd. Link-Belt K360 shovel and a 2½-yd. Bucyrus-Erie 54-B dug out the 40,000 cubic meters of soft material and rock. Both shovels had been shipped from Veracruz to Cusi by train. They completed the additional 55 kilometers to Zicuiran under their own power.

Later, the Link-Belt machine moved 90 feet down the river bed to dig gravel and rock, which was loaded into Euclids for dumping into the dam more than 100 feet below.

Joining the 54-B in attacking the bank bordering the access road was a 1¼-yd. Manitowoc which was brought in from the Capirio bridge on the Coast Road. The Manitowoc and the Link Belt were powered by Caterpillar D13000 engines; the 54-B had a Buda engine. All three machines were equipped with Page buckets.

On the hilltop 11 meters above, three new Thor wagon drills, powered by Schramm and Jaeger compressors, were at work. For each cubic meter of excavation, 600 grams of dynamite were used. A second TD-24 dozer cleared ground for drilling. It also kept access and camp roads in condition.

A new Le Roi 600 compressor, powered by a Cat D13000 diesel, supplied compressed air for four Chicago Pneumatic Model 89 rock drills, mounted on a drill jumbo for digging a diversion tunnel. For each cubic meter of excavation, about three kilos of dynamite were used.

The diversion tunnel involved 5,000 cubic meters of rock excavation, with another 3,000 cubic meters of excavation in entrance and exit portals. The tunnel is 230 meters long and 5 meters in diameter.

A Euclid dumps into the dam. The dam will be 43 meters high, 152 meters long, 243 meters wide at base, 20 meters wide at the crown. Dam will cross Zicuiran River.

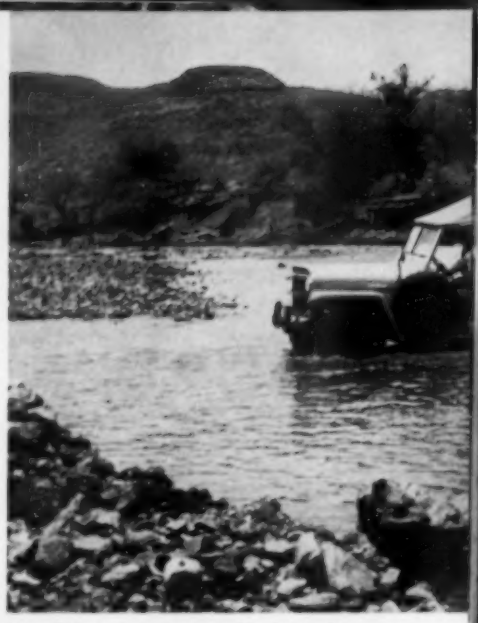
Loose Rock Washed Out

Six Jaeger pumps—two 2-inch, two 4-inch and two 6-inch—and 10-in. CMC and Continental pumps sprayed high pressure streams of water on the rock rising in the dam at the rate of about three parts water to one part rock. An International crawler pushed loose rock into formation.

When this article was written, a Rex Duplex 200 Pumpcrete was pouring the 6-in. concrete lining. The Rex also was to be used for the lining of the intake tower, 60 ft. high and 15-in. wide.

Although disagreeable, the heavy seasonal rains presented no formidable obstacles to progress, engineers said. The

Much hand labor is needed on the project, which is located in what was one of Mexico's inaccessible and backward regions. Here workers pull a Red Seal pump to a job.



An ICA Jeep crosses Zicuiran River. Michoacan is located on Pacific Ocean.

five Euclid dumps, all of 20 tons capacity, were equipped with Goodrich Rock Lug tires to cope with the wet sharp rock. The two Chevrolet and two Ford dumps also had no difficulty in moving materials.

Work was being done six days a week in two 10-hour shifts, with 450 men on the job. Lighting first was furnished by a Buda engine. Later, to increase power, a Cat D13000 electric plant was moved in.

The morning we crossed the river, Perez Rubio said that within a month the bridge might give out. To cope with this eventuality, Rubio had arranged to ferry supplies across the river by hand cable, with Jeeps and dump trucks at either end to load and unload. Two 251-meter long pipes were to span the river and transport gasoline and diesel fuel. At the time of our visit, Rubio already had stockpiled in camp 850 tons of cement, 45 tons of reinforced steel and reserves of gasoline and diesel fuel.

After fording the Zicuiran River on our return trip, we met a dump truck

Adobe buildings, cool in a hot season that lasts almost the whole year, rise in the camp. Note burros and Ford trucks.

and a Jeep. Their drivers warned us that we could not cross the Marquez River; the bridge was two-thirds under water. The river had been swollen to a perilous degree by rains pouring down from distant mountains.

But my companions wanted to spend the night in Uruapan, so we attempted to cross the river. We almost spent the night in the river. We were a dozen meters into the swirling water when our Jeep stopped, powerless to resist the rising current. We were rescued an hour later by a dump truck and cable.

Later we met a truckload of night workers. As the men climbed out and rushed our vehicle, the paymaster reached for his bag. Seventy per cent of the native workers neither read nor write, or do so with difficulty (their children, however, will be in school before the end of the year). To save time, receipts for the checks are made with thumb prints.

Pay 75c a Day

Unskilled labor on the project is cheap. Laborers are paid about 75 cents a day, which seemingly is a small fortune to men who formerly never jingled more than three or four pesos in their pockets at one time. To some it is a fortune. To others, however, money is no compensation for hours of torturous toil. After a few days on the job, many workers return to their old life, feeding themselves and families with beans and corn

Continued on page 62

Two Rubios—Perez (left), Tepalcatepec administrative chief, and Luis Perez—meet. Luis Perez Rubio arrived from ICA's office for an inspection trip.

It's lunch time on the job. Tropical fruits are brought to the workers by a burro. The woman is the owner and vendor of the business. Laborers earn 75 cents a day.

Ing. Luis Zarate (left) is resident engineer of the dam project. He is with foreman Jesus Urtega. Many native laborers acquire an uncanny ability to manage tools.

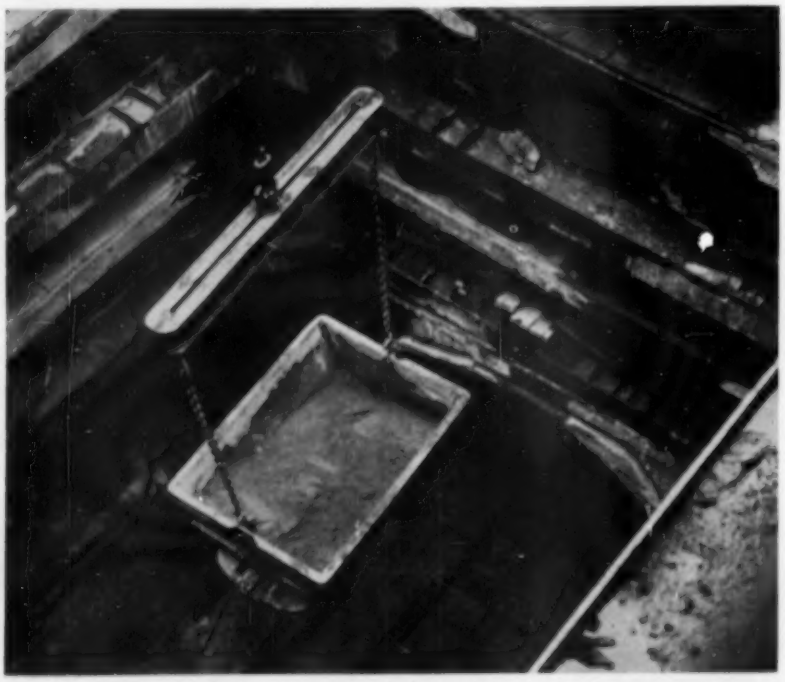
Crane Aids Tunneling for Sewer

TUNNEL excavation has been underway since May in construction of a four-mile long relief sewer in the Conant-Mt. Elliot district of Detroit, Mich. The $8,323,500 contract to put in a 15½-ft. diameter (finished) interceptor storm sewer was awarded by the City of Detroit Department of Public Works to Gargaro Co., Inc., Detroit.

The job, involving an estimated 500,000 cubic yards of excavation alone in tunneling under a main thoroughfare, is expected to take approximately two years to complete. Tunnels are being dug out two miles in each direction from a 21 x 20 x 48 ft. deep vertical shaft. An 18½-ft. diameter hole is being excavated for the 15½-ft. finished tunnel, allowing for a concrete wall 3-ft. thick.

Tunnel work is an old line for the Gargaro firm whose president, Don Gargaro, has been handling heavy underground construction for sewage and water supply for almost 50 years. Most of the work has been in the Detroit area.

Gargaro Construction Company's Bucyrus-Erie 38-B crane lifts an Easton mud-box from the tunnel. When loaded with blue clay from tunnel, a mud-box weighs eight tons.



Blue clay is removed from the tunnel during the night shift. During the day, the mud-boxes are lowered into the pits loaded with sand, cement bags, equipment and tools.

Management of the firm today is largely a family affair. The president's son, E. D. Gargaro, is currently project manager. His brother, A. J. Gargaro, handles all equipment problems.

A lifting crane has become an important excavating tool in the Gargaro method of underground work. A Bucyrus-Erie 38-B, equipped with 50-ft. boom and special sling, lifts out Easton mud-boxes which are similar to mining cars. The mud-boxes are filled with blue clay mud, known in the industry as mud-dogs. The mud-boxes weigh approximately eight tons when filled with capacity loads of three cubic yards.

The heavy-duty crane is available for lifting assignments at all hours on an around-the-clock work schedule. Its primary job, however, is confined to the midnight shift (11 p.m.—7 a.m.) when the mining is done. Concrete is poured

Veteran firm uses mining car system on $8-million, 4-mile project in Detroit.

Mack truck with 4½-yd. mixer feeds redi-mixed concrete into Chain Belt Pumpcrete. Material is pumped through pipes to form.

on the day shift, from 7 a.m. to 3:30 p.m., and monkey-holing consumes most of the afternoon shift.

Production is consistently about 108 mud-boxes for approximately a 16-ft. drive one-way. Mining in both directions means that about 216 loads are taken out each shift by the 38-B.

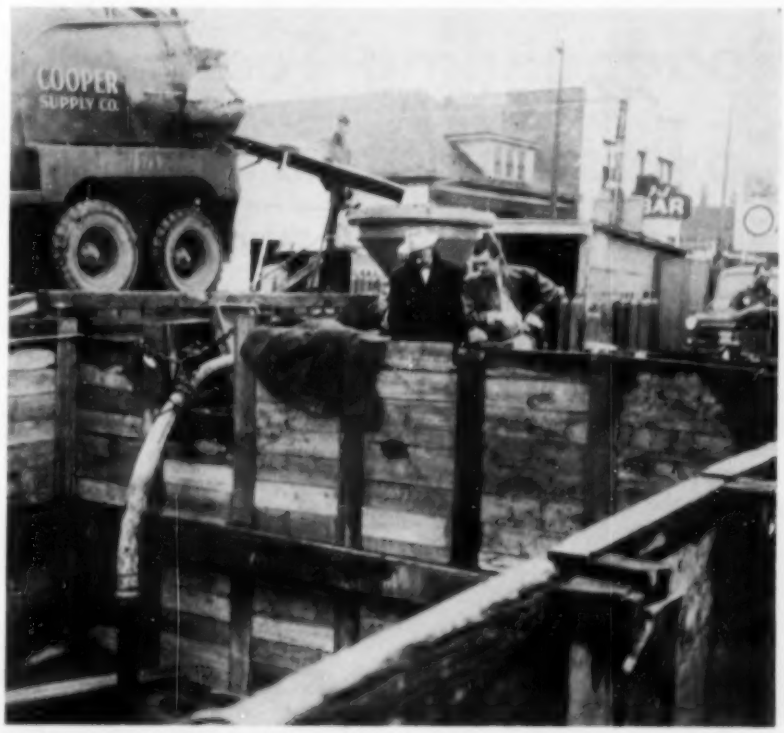
Down in the tunnel, two electric "dinkies"—mine locomotives—team with one switch engine to pull the mud-boxes to and from each drive. Some 50 to 60 mine cars are used in the two tunnels.

One Pour Per Day

Three Chicago Pneumatic air compressors (1,500 lbs. each) and a couple of stand-by compressors provide both low air for the tunnel pressure and high air to supply a pneumatic spade and the pneumatic triggers for the cutting knives which work in the mud-dogs. The tunnel is kept at about the normal 10 to 12-lb. pressure. This can be increased to 25 pounds or more when necessary through a set of air locks.

Redi-mixed monolithic concrete is supplied in one pour per daily shift through the combined efforts of Thomas E. Currie Co. and the Cooper Supply Co., both of Detroit. A fleet of possibly 100 Mack trucks, equipped with 4½-cu. yd. mixers, keeps a steady supply of concrete going into a Chain Belt Rex Pumpcrete. The latter, located at the lip of the shaft, pumps the concrete into the tunnel forms. Although quick-setting, the concrete is kept in the forms for at least 75 hours.

The possibility of encountering quicksand is always present, but the experienced personnel of Gargaro Co., is prepared for emergency well-pointing. Present excavation, however, is "made to order" for underground veterans like the Gargaros.



E. D. Gargaro (right), project manager, describes operation of tunnel job to a visitor. Dan Gargaro, the firm's president, has been in the business about 50 years.

One of Pioneer's three partners, Joe Mansfield, crawls aboard a Cat tractor to give his operator some first-hand instructions.

Roadbuilding Team Covers Lot of Ground

by Ray Day

ON THE wind-swept, dusty floor of Colorado's eastern plains at Limon, where U. S. Highways 24, 287 and 40 join each other for a few miles, a fast-working tractor equipment spread hogged out a grading job. Driving past, one could see at a glance that this was an unusually efficient dirt-moving spread. Letters on the side of each piece of company equipment spelled out: "Pioneer Construction Co., Pueblo. . . ."

Far out in western Colorado, near Grand Junction, a mountain highway was being paved. Here again the Pioneer Construction Co. name was much in evidence as a bituminous laydown machine, fed by trucks hauling from a new hot plant, set a mark of over a mile of highway a day for other Colorado contractors to shoot at. . . .

Or move south, near the Colorado-New Mexico state line, in farm-to-market road country near Monte Vista. There, in a spectacularly beautiful valley ringed by snow-capped mountain peaks, Pioneer Construction Co. equipment again was busy. Two new Bucyrus-Erie 38-B machines, one rigged as a shovel and the other as a dragline, each handled over 3,000 tons of pit-run gravel a day as they worked simultaneously on two farm-to-market road jobs. Trucks and auxiliary processing equipment hurried another job to completion.

In the Denver office of the Colorado State Department of Highways, the Pioneer Construction Co. name appeared again as a new set of bids was opened.

The Pioneer Construction Co. name has been made to loom large in Colorado roadbuilding; its new highway construction team has picked up impetus in the important Rocky Mountain transportation industry.

By June 1, three weeks before any calendar in Colorado officially said that it was summer, Pioneer had finished about 35 miles of new highway construction. During 1955, the company expected to start and finish seven or eight roadbuilding contracts.

Colorado's roadbuilding team has three

Starting with little in 1951, Pioneer Construction Co. of Pueblo, Colo., now has sizable fleet of construction equipment to build good highways. It has established a fine reputation.

human spark plugs; each man is an experienced old gunner of the construction business.

Joe Mansfield, 43, is a veteran construction superintendent, rock plant operator, mechanic and general roustabout whose quarter-century background in the business included many jobs through Colorado and New Mexico for Brown Construction Co. of Pueblo. Mansfield is a good rock-crusher man by any standard.

Experienced in Construction

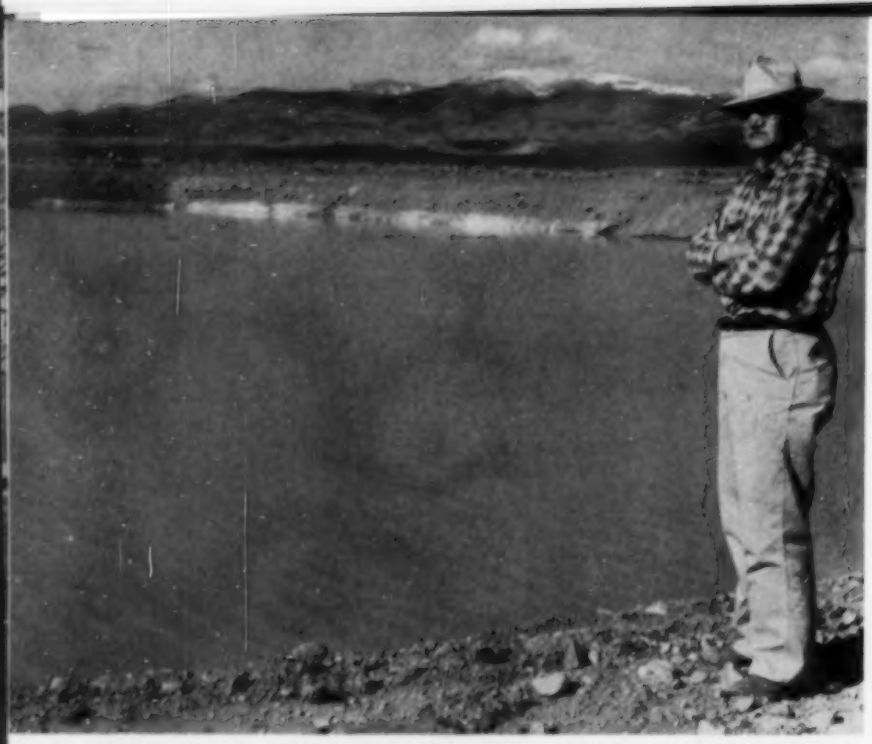
In eastern Colorado (or by the next night it might as easily have been western Colorado) was Clarence Brown, another long-time veteran of Brown Construction Co. He, too, is an experienced construction man. Genial, hard-driving and one of the most competent men in the construction business in Colorado, Brown also is the kind of construction man to assume personal charge of his particular spread, or, if necessary, prepare a bid or trouble-shoot one of the other jobs.

Kyndall La Casse is the third partner in Pioneer Construction Co. He, too, has experience which belies his years. La Casse draws most of the paving work. He also has personal supervision over his particular job, which includes a complete line of bituminous paving equipment. When Brown and Mansfield finish, La Casse starts. And when La Casse finishes, the Colorado State Department of Highways has another new road to be proud of.

Operating from a natural gravel pit located 15 miles south of Monte Vista in south-central Colorado, Pioneer's Bucyrus-Erie 38-B loads material into a Ford truck.

Consider these figures: In eastern Colorado, Pioneer's three Euclid single-power scrapers each handled 200 cubic yards an hour on an 800-ft. haul. At Monte Vista, Mansfield, the hard-bitten veteran of the team, took a new Bucyrus-Erie 38-B dragline and socked it into its first pit. It brought up alluvial gravel

A 38-B dragline dumps load of gravel into a White truck. The operator could put 25-ton loads into the White in 2½ minutes.



Mansfield looks over the lake made by the 38-B dragline, which excavated 100,000 tons of gravel from the site in 30 days. The new lake has been well stocked with fish.

for a roadbed. In 30 working days, 100,000 tons of material was loaded into trucks. In western Colorado, La Casse in eight hours shoved 1,180 tons of plant mix through a hot plant so portable that it could be torn down for a move in three hours.

Pioneer Construction Co. is a triple-threat outfit. But it wasn't that way at the start. The company today has enough equipment to bid practically any type of highway construction in Colorado except concrete paving, and it can even bid certain portions of that. To make the grade, Pioneer had a long, arduous climb.

It was late 1951 when Mansfield, La Casse and a third partner, John Alger, got the urge to enter business. Alger, too, was an alumnus of the Brown Construction Co. The three men parted amicably with Brown Construction Co. and struck out on their own. One of the first machines the newly created Alger Construction Co. owned was a venerable old Cedarapids rock crusher which Mansfield had unloaded new in New Mexico in 1934. Mansfield had spent so many hours on this machine that he could do almost everything with the rig except make it talk.

The only other equipment the new company had was a Lorain 79 power shovel, a used motor grader and an old Caterpillar tractor. It was hardly an outfit to consider optimistically in a general roadbuilding picture. But the three men looked forward eagerly to their share of rock crushing and oiling work, typical of highway construction in the Rocky Mountain region.

Succeed From First Job

From a modest beginning the company began immediately to succeed. These were humble, hard-working men: in their minds was none of the glamour of general contracting which calls for trips to the Waldorf or fancy penthouses in Denver. Joe Mansfield in khakis—dirty, greasy khakis at that—ran the Cedarapids rock plant. Big, husky John Alger, wise in construction ways, gave the rock crusher a break by standing at the input belt and tossing off oversize boulders. La Casse took care of the books and labor. The first job succeeded. And even today, with a much larger equipment inventory, these men retain the close personal touch with their work.

Business prospered. Other road jobs came up, and the men sharpened their pencils. Far out in the northwestern corner of Colorado near the Utah state line, an unlikely looking job in a remote section fell prey to their careful esti-

A 25-ton load of gravel is spread over a farm-to-market highway—state route 374—by the White. A Cat D8 dozer follows.

One of the latest pieces of equipment purchased by the Pioneer Construction team is this Pioneer 46-VE rock crushing plant.

mating. The company got the contract but it involved excavation calling for equipment in which the embryo outfit was deficient. That was the start of equipment buying which led to the company's rapid growth into an all-purpose roadbuilding outfit. The first purchase was an International truck, so that excavation could be moved by the Lorain shovel. Drawing only $100 per week, hardly more than union wages for a tractor operator, the three men went to northwestern Colorado and doggedly set to work and came out in the black as they knew they would.

It was at that time the partners realized that a sure way to be out of work part of the year was to continue specializing only in sub-base and gravel work. Most of the contracts were being let for a completed highway: grading, drainage, production of rock base and paving. To do highway construction, these men realized that they needed not only a dirt outfit but also a rock outfit and a complete paving line. So outfitted, there would be opportunity to bid also airfield and other allied work. A rapid buildup of construction equipment was begun. Two Le Roi compressors and some jackhammers were added to help with rock drilling. Then came an Allis-Chalmers tractor-mounted front-end loader, which gave good service before it was traded in on shovel and dragline equipment. Two scrapers, more Caterpillar tractors and a new motor grader were added. Later, after the firm became Pioneer Construction Co., three Euclid single-power scrapers were obtained to fill an important gap in the company's work quota. Two Bucyrus-Erie 38-Bs were purchased.

The addition of steel-wheel and pneumatic road rollers followed. About $12,000 apiece was spent on two truck-mounted water wagons for hauling the thousands of gallons of water needed on the jobs. Another $6,000 investment was a mobile truck-mounted lubrication and service rig. The latest equipment, added early in 1955, included a new Pioneer Model 46-VE crushing and screening plant, a new Pioneer No. 81 asphalt plant with a Pioneer No. 375 drier and dust collector unit, a Barber-Greene lay-

Continued on page 36

Working in close co-ordination with the truck, the D8 (left) spreads gravel. Cat No. 12 motor grader (right) blades sub-base.

Continued from page 33

down machine for asphalt paving and other rolling equipment.

The only gap in the story of the steady growth of the company is the change in name from Alger Construction Co. to Pioneer Construction Co. John Alger, who had worked so hard to get the firm moving, saw the day when he faced a tough verdict which other busy men have faced.

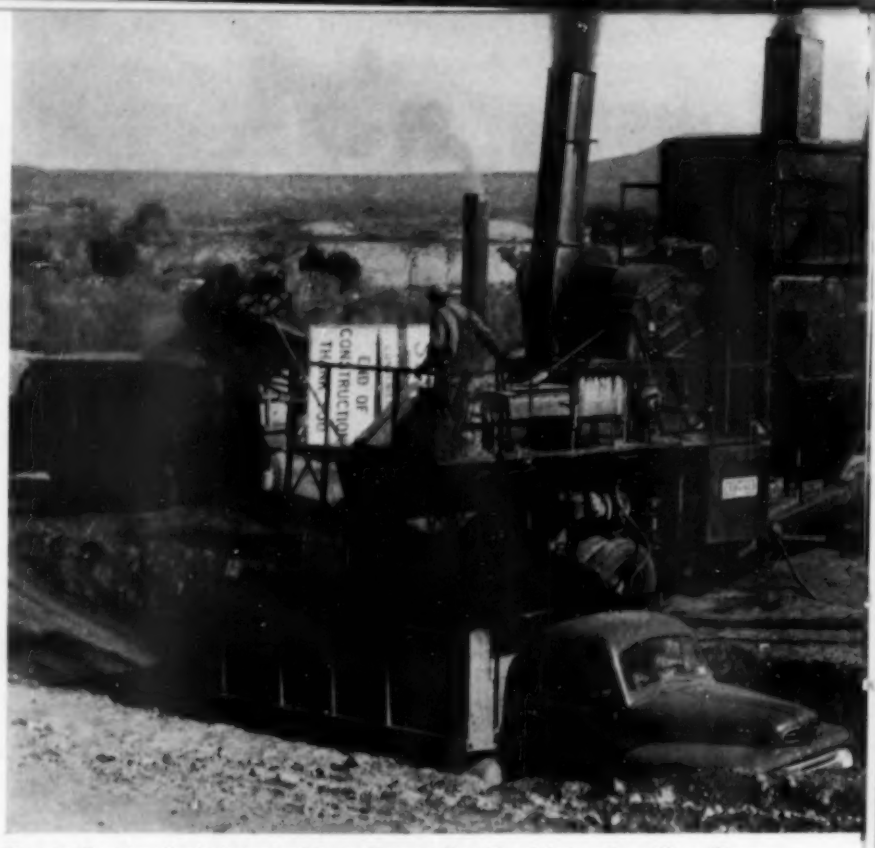
"You've got a heart condition, John," his doctor said. "You'd better get out of the construction business."

It was then that Clarence Brown came into the company. Brown, a long-time friend of the three men, purchased Alger's interest. To this day, all are the best of friends and nobody is happier at the success of the new company than Alger. With Brown's entry into the business, the name of the firm was changed to Pioneer Construction Co.

Policies of Men Reflected

The present general business policy of Pioneer Construction Co. is, like those of other sound companies, a reflection of what is in the minds and hearts of the key men. Pioneer's policy reflects progressive, optimistic and flexible thinking. Believing that it takes the best of modern machines to make money in the construction business, the company has purchased that kind of equipment and has made a further policy of properly maintaining it. The Pioneer crusher, for example, usually operates under the dirtiest, dustiest conditions of any machine on the string. A visit to the plant showed that it was clean and well polished.

Safety is an important factor with



Pioneer Construction's hot plant is a Pioneer No. 81 mixing unit, with a Pioneer No. 375 drier and dust collection unit. Trailer-mounted power plant is GM diesel.

A Barber-Greene finisher works on an asphalt road near Grand Junction, Colo. Pavement goes down at rate of a mile per day.

Pioneer because men like Mansfield have seen many times what its lack can do. The driveshaft on the Pioneer 46-VE plant is close-coupled to the driving engine by a flexible joint. One of the first things Mansfield did was to have his welder build a steel cover which folds over the driveshaft, so that men could walk over the coupling in perfect safety. This and other safety features are evident everywhere.

The company has a middle-of-the-road type bidding policy. It never bids merely for the sake of bidding. When Pioneer bids a job, it is because it wants the work, has the equipment to do the job and is ready to push it to the hilt. Pioneer's bids are sharp and well conceived. No contractor likes to bid too low so that much money is lost on the table. Pioneer's partners are no exception, but neither would they feel well if one of their bids was high. These men pride themselves on doing work cheaper than the majority of their responsible competitors.

These policies have had the effect of creating a close-knit, fast-moving highway construction organization. A Pioneer Construction Co. job is a production line project. Soon after a contract is let, the dirt spread moves in. The rock plant outfit, motor grader and other equipment follow at the proper time; the rock plant crushes whatever mineral aggregate the paving crew might need. Usually the paving crew moves in and starts work before the last of the rock gang is entirely off the site.

To get the notes for this article, it was necessary for *Excavating Engineer* to move virtually from one corner of Colorado to the other. What we found as we visited the far-flung outfits follows.

Dirt Work Comes First

On the floor of the Great Plains at Limon, 80 miles east of Denver, within sight of the majestic snow-capped Rockies, Clarence Brown held forth with the company's dirt moving spread. It was a fast operation, so much so that the company had two jobs close together. On U. S. route 24, between Limon and Genoa, the company had a nine-mile section, largely of two-lane construction, although some four-lane divided highway also was in this contract. The contract called for grading, surfacing with plant-mixed asphalt and a gravel base. The company took the 720,000-cu. yd. unclassified excavation job at a contract price of 18 cents per yard, which gives some indication of its optimism so far as dirt moving is concerned. Also included in the job was 244,200 tons of Class 2 granular base-course material; it was being produced locally, hauled in and spread in about the same way Mansfield was doing that operation farther south.

Limon is the junction for U. S. 24, 287 and 40, after these transcontinental routes run together for about 10 miles. Improvement work on various legs of the "Y" really gave Pioneer Construction Co. two contracts, including a four-mile section of U. S. 40 between Limon and Hugo. This was entirely a two-lane job, with contract items including grading, structures, sub-base and hot-mix asphalt surfacing. Principal quantities included 190,000 cubic yards of unclassified excavation, 89,200 tons of Class 3 sub-base material, 29,200 tons of crushed gravel and 14,180 tons of plant-mixed asphalt surface. Both jobs were on important sections of the east Colorado highway network.

In characteristic fashion, Pioneer was well equipped to move this dirt fast. Operations were aimed at the movement of about 5,000 cubic yards of material each day, six days a week. Pioneer was concentrating principally on dirt work, after having subcontracted the concrete structures to Gardner Construction Co. of Glenwood Springs, Colo.

The dirtmoving outfit for both jobs included three Euclid single-power scrapers, a Wooldridge 18-yd. scraper with a Cat D8 prime mover, five Caterpillar D8s with dozers, three double sets of McCoy sheepsfoot rollers and six truck-mounted water tanks of 2,000 to 3,500 gallons capacity. There was also a Traxcavator front-end loader mounted on a Caterpillar D6 for use on odd jobs, including backfill around corrugated pipe culvert sections.

This job was located through gently rolling terrain, with moderate cuts and fills. The dirt quantities were well balanced so that the equipment could move at its best productive rate. The Euclid scrapers were being loaded in the cut sections with the help of a Cat D8 pusher. When possible, the pusher also helped the Woldridge scraper take its dirt loads.

Out on the fill, the material was being spread in 6-in. lift. The optimum moisture content was between 15-20%. Moisture was being added artificially when necessary, though frequent spring rains helped much. The double sheepsfoot rollers than made from six to eight passes across each lift to develop about 95% of Modified AASHO compaction.

On the surface, it seemed like this

Kyndall La Casse, one of the Pioneer partners, draws much paving work.

Working on the Limon-Genoa spread in eastern Colorado, a Euclid single-power scraper is being loaded to the control cables. A Cat D8 provides a pushing assist.

was simply a routine, well-equipped operation. Actually, the speed with which the dirt around each balance point was going in and the rapidity with which each section was being completed was gratifying. It was fully in keeping with the other two spreads.

Good Rock-Crushing Outfit

In southern Colorado in the vicinity of Monte Vista, Mansfield's rock-crushing outfit was busily engaged on farm-to-market highway construction, adding two new important segments to Colorado's state transportation system. The work covered two contracts, both on secondary state roads. On state Route 374, north of Monte Vista, a 3.7-mile section was under construction at a contract cost of approximately $100,000. The job included such items as a general shaping-up by motor grader of the old gravel roadbed, which already had been located on permanent alignment, and the production and installation of 1½ to 3 feet of granular base-course material, some of it crushed. The job also included two inches of plant-mix asphalt surfacing 22 ft. wide, centered in the 28-ft. roadbed top. A chip seal, originally proposed, was work-ordered out of the contract.

Mansfield's other job also was on a state secondary road, approximately 15 miles south of Monte Vista. It was 3.5 miles long, contained work items similar to the north project and represented a contract price of about $85,000. The southern job had a little more dirt work than the north.

High unit production was why these secondary jobs were carried out rapidly and profitably, Mansfield said. He remembers ruefully the early days when there wasn't enough equipment in the company to operate a job efficiently. That those days definitely were over was clearly evident on his spread.

On the north job, for example, Mansfield moved in and rapidly shaped the 28-ft. roadbed top. One of the company's Caterpillar No. 12 motor graders was used there, along with water tank truck equipment. It was a fast moving, precise operation, leaving behind an excellent surface from which to start the sub-base. The production and installation of sub-base material actually was the big item in each of these contracts.

On the theory that a 1½-yd. machine was the best all-around rig, the Bucyrus-Erie 38-B was purchased. Pioneer wanted a machine equipped with a torque converter between the main engine and the dragline's drums. The 38-B it purchased had a General Motors Series 6-71 diesel engine and torque converter drive. The machine also had Bucyrus-Erie's full-rotating fairlead, a 45-ft. dragline boom and a 2-yd. Hendrix lightweight perforated-type bucket. The use of this oversize bucket on the dragline had been very successful in easy digging such as the gravel pits furnished.

The 38-B dragline was working two pits on the north job. The first site, furnished by one of the nearby farmers, is now a lake well stocked with bass, bluegill and crappie. In digging the pit, the operator shaped it to rectangular proportions and did an unusually precise job in sloping down the banks. The spring of 1955 was an abnormally dry one, which was fine with Mansfield and the farmer. The pit was excavated when the water table was at least seven feet lower than normal. When rainfall is normal, the pit should make a first-class

Note the activity in the background as a well-filled Wooldridge scraper moves downhill in the direction of the fill. Pioneer had nine-mile section on U. S. route 24.

lake for fishing or stock-watering purposes. About 100,000 tons of pit-run gravel, three inches in size and smaller, was moved from this one location in 30 days.

Seven Dump Trucks

Mansfield was using seven dump trucks under the 38-B dragline. Five of them were 7-yd. Internationals; two were 13-cu. yd. White Super-Power units. A Caterpillar D8 dozer leveled each load as it was dumped alternately between halves of the road. A Caterpillar No. 12 motor grader did finish work. Rolling was done by a Huber three-wheel 10-ton machine.

An indication of Mansfield's high dragline performance was that the operator could put a 25-ton load in one of the big White trucks in 2½ minutes. The dragline operator was a young man who was willing to listen when Mansfield passed on some of the production tricks he had gained in his long years of experience.

A point which Mansfield had stressed repeatedly was the importance of always keeping the hoist cable reasonably tight. By doing that, the dragline bucket is in position to dig the moment it hits the ground; there is no five second waiting period while badly unwound cable is re-reeved to crush itself on the drums. Also, if the drag bucket digs into a big boulder, the hoist cable can be tightened sufficiently to jiggle the boulder loose without snapping drag cables. Mansfield said that one ⅞-in. drag cable on the 38-B, used for the entire 100,000-ton pit, was still serviceable when the job was finished.

The same features which added to the 38-B's dragline production also worked on the 38-B shovel. This machine was operating from a natural gravel pit 15 miles south of Monte Vista and also was loading trucks. Production between the shovel and dragline was on a day-to-day competitive basis, the shovel winning one day and the dragline the next. Both machines had averaged 3,000 tons and more in eight hours. The trick was to keep enough trucks under the machines.

Pioneer Construction Co. had not gone extensively into the truck business, so most of the machines were rented from private owners. On short-haul jobs, such as the ones near Monte Vista, the trucks were rented on an hourly basis. On long-haul work a ton-mile rental basis was used.

Most of the truck owners who rented their machines to Pioneer were specialists along that line. There was at least one exception, however. The truck in question was a three-ton Mack, new and in excellent condition. The owner was a 17-year-old high school miss who made the $500 down payment on the machine with savings accumulated from the time she was a small girl. After making her payments on the truck, this astute and pretty business-woman nets from $250 to $350 a month for the average eight

Cont'nued on page 63

Panoramic view of the Limon-Genoa spread is offered as two sets of McCoy sheepsfoot rollers, behind Cat crawlers, compact fill.

Huge earth-moving combination on Ohio job dwarfs men. M-R-S 200 Special Tractor pulls the 34-yd. Wooldridge-M-R-S Scraper.

News from the Field

Large Scrapers Active

What may be the largest rubber-tired earth moving units in use today recently were employed on an Ohio road job by the Replogle Construction Co. of Circleville, Ohio.

The units are the 500-hp M-R-S 200 Special Tractor and the Wooldridge-M-R-S OS-300B Scraper. The tractor powers the scraper, which has a struck capacity of 34 cubic yards and a heaped capacity of 41 cubic yards.

Two such combinations were delivered to the Replogle firm, which used them on a project for relocating state route 7 near Stratton, Ohio.

The scrapers were equipped with what the Goodyear Tire & Rubber Co., Akron, Ohio, called the first and largest tubeless earth mover tires marketed. Known as wide base earth movers, the tires were mounted on the scrapers at the Stratton jobsite.

The back wheels of the scrapers took size 37.5 - 33 tires, which weigh about 2,000 pounds each and cost approximately $5,000 each. Size 33.5 - 33 tires were mounted on the front wheels.

The same kind of tires, size 29.5 - 29, were placed on the drive wheels of the M-R-S tractors.

Eight tubeless wide base tires, with a retail value of more than $40,000, for the two Wooldridge-M-R-S OS-300B scrapers, were picked up at Akron for delivery to jobsite.

The tires were mounted on extra wide rims, which permit their use with lower air pressures and allow greater flotation, according to Goodyear.

Goodyear has been manufacturing wide base earth mover tires for some time. Its first tubeless earth mover tires, however, were those installed on the M-R-S units.

GM Stages Powerama

General Motors pulled out the stops to celebrate the production of its 100 millionth diesel horsepower. The manufacturing giant staged Powerama, a month long exhibition on Chicago's lake front to portray the contributions of diesel and aircraft power to America's industrial economy. The show was concluded Sept. 25.

Included were more than 250 exhibits, among them a lightweight GM train, a navy submarine and other craft, saw mill, cotton gin, oil drilling rigs, dump trucks, scrapers and tractors, a plowing demonstration, the "kitchen of tomorrow," experimental "dream cars" and a "dream truck," the gas turbine powered XP-21 Firebird car, a roadbuilding exhibit, a fighter plane, tanks, guided missiles and other defense exhibits.

Also presented daily was a unique stage show, featuring dancing construction equipment and live animals, among other things. What was claimed to be the world's largest dump truck, a Euclid,

was converted into a "swimming pool" into which divers plunged from a platform mounted on the truck cab.

Demonstrations of the principles of diesel and gas turbine power were offered in many exhibits, including a "Power for Progress" show presented in a large tent by a GM staff.

The following GM divisions participated in the Powerama: Allison, Buick, Cleveland Diesel, Detroit Diesel, Diesel Equipment, Electro-Motive, Euclid, Fabricast, Frigidaire and GMC Truck & Coach.

AED Meeting Set

The 37th annual meeting of the Associated Equipment Distributors, the national trade association of the construction equipment industry, will be held at the Chicago (Ill.) Conrad Hilton hotel Jan. 29-Feb. 2, 1956.

W. A. Patterson of the Richards Equipment Co., Waco, Tex., heads the convention committee. Other committee members are: S. G. Marks, Marks Tractor & Equipment Co., Cleveland, Ohio; Don F. Nickel, Don F. Nickel Equipment Co., Grand Rapids, Mich.; R. F. Newlin, Newlin Machinery Corp., Kansas City, Kan., and C. C. Tambornino, The George T. Ryan Co., Minneapolis, Minn.

An AED four region conference, embracing construction equipment distributors from 13 midwestern and northern states, was held in St. Louis, Mo., Sept. 14-16. States represented included Kentucky, Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, South Dakota, North Dakota, Iowa, Kansas, Missouri and Nebraska.

The meeting was held under the guidance of the four co-operating AED regional directors: F. J. Lorenz, The Lorenz Equipment Co., Columbus, Ohio; John G. Lindner, Jr., Bark River Culvert & Equipment Co., Eau Claire, Wis.; J. R. Borchert, Borchert-Ingersoll, Inc., St. Paul, Minn., and G. L. Walter, Missouri-Illinois Tractor & Equipment Co., Robertson, Mo.

D. C. Adding Kilowatts

Growing power needs in the District of Columbia (Washington) will be handled by a $15 million extension to the Potomac River generating station in Alexandria, Va.

The Potomac Electric Power Co. has retained Stone & Webster Engineering Corp. to design and construct the 100,000 kw extension, to be known as Unit No. 5. The power company also plans to install a new substation and submarine cables to bring another primary power source to downtown Washington.

The project is scheduled to be completed in May 1957.

An underclearance of a viaduct was too low to allow use of paving machines, so a Bronx (N.Y.) firm employed a pair of Michigan tractor shovels as concrete buggies.

Public Works Congress

The 61st annual Public Works Congress and Equipment Show was held Oct. 2-5 at Milwaukee, Wis. Walter M. Swietlik, Milwaukee's commissioner of public works, was general chairman. The sessions included papers, addresses, section forums and question tables on 30 public works topics.

Pouring Problem Solved

When the underclearance of a viaduct was found too low to allow use of paving machines, the Slattery Rock Corp., Bronx, N. Y., recently used two tractor shovels as concrete buggies for the pouring operation.

Slattery had the paving contract for a portion of New York City's Major Deegan Expressway, a connecting link with the southern end of the New York State Thruway. Work progressed smoothly until Slattery encountered a viaduct, which stretched 800 feet over four of the six 12-ft. wide lanes.

Clearance under the viaduct was 14 feet, too low to permit raising the pavers' skips to feed batch into the mixing drum. It was then that two four-wheel drive Michigan tractor shovels, carrying 1¾-yd. buckets, were brought into action.

The paving machines were moved to the fifth lane, which was not covered by the viaduct. The mixed concrete was discharged directly into the buckets of the tractor shovels. Moving back and forth between the pavers and the four overhung lanes, the tractor shovels pushed directly up to the footings before making a pour.

John Saunders, job superintendent, said that from 200 to 250 passes of the tractor shovels were made to pour each 800-ft. lane in four hours. Elsewhere on the job, the tractors were used to pour in spots where utilities and other obstructions hampered use of the paver.

AGC Governors Meet

A mid-year meeting of the governing and advisory boards of The Associated General Contractors of America, Inc., was held Sept. 28-30 in Minneapolis, Minn. The meeting was to have studied trends in the current construction boom and also a wide range of other subjects vital to the industry.

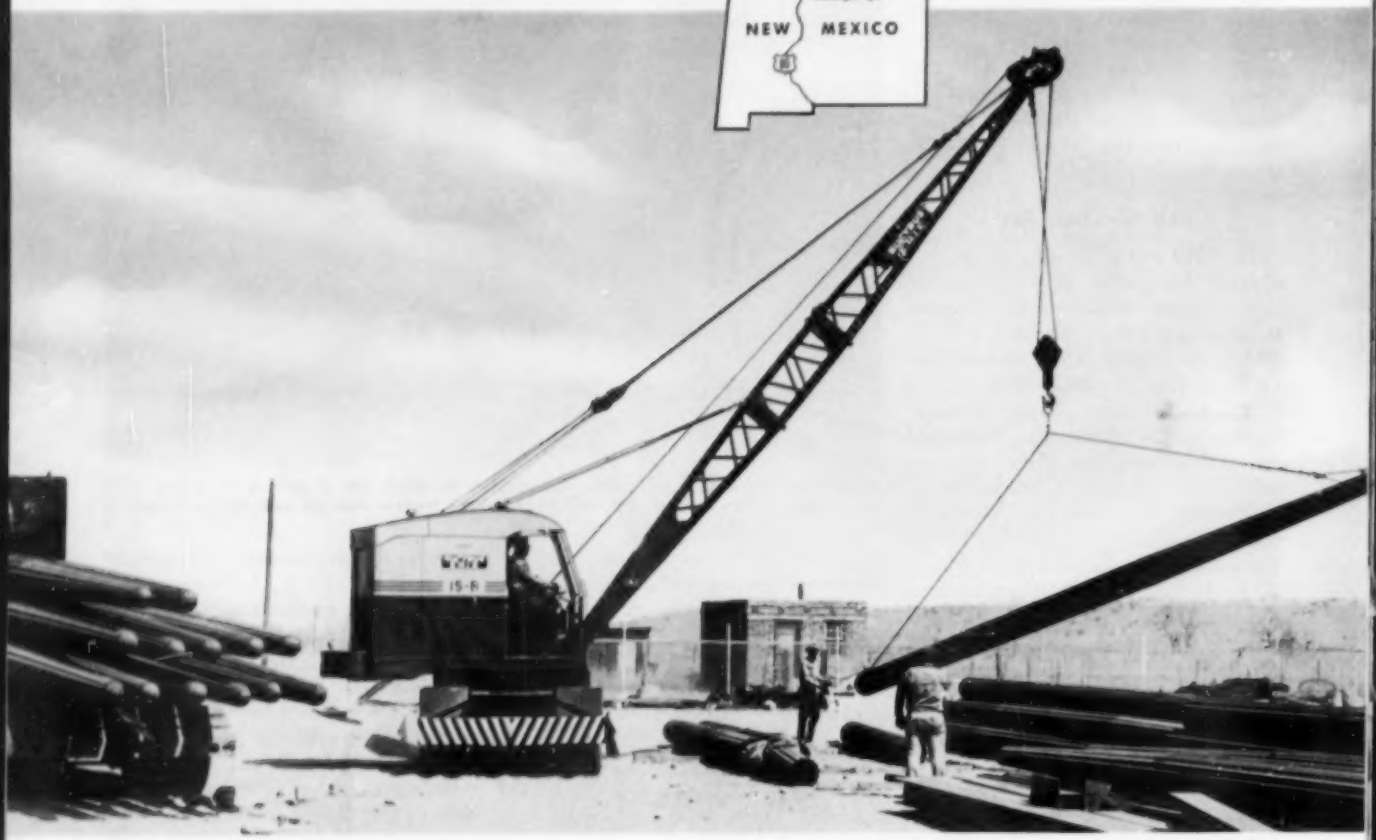
Grain Elevator Raised

Soon after its completion, a 273-ft. section of the 5 million bushel Equity Union grain elevator at Lincoln, Nebr., tipped and settled. The concrete tanks were 128 ft. high and 65 ft. wide.

The job of stabilizing the soil and

Continued on page 60

MODERNIZING U. S. HIGHWAY 85 IN NEW MEXICO



Here, the 15-ton 15-B Transit Crane was used to load lengths of steel piling to a truck.

Four Bucyrus-Erie machines, owned by J. H. Ryan and Son, Inc. of Albuquerque, handle construction of three bridges on job. "19 years of experience with B-E equipment has proved its reliability and economy of operation,"

. . . says the owner

BUCYRUS-ERIE COMPANY · SOUTH MILWAUKEE, WISCONSIN

Here's a firm whose main business is the construction of bridges. At present they are building three for the New Mexico State Highway Department on U. S. Highway 85. A new 12.8 mile section of two-lane highway is being built parallel to the existing two-lane roadway. This new section extends northward from Algodones and will complete four-laning of U. S. 85 from Albuquerque to Sante Fe.

15-B Unloads Beams

Workhorse on the project is a Bucyrus-Erie 15-B Transit Crane. It has been used for loading steel piling onto trucks in a storage yard at Bernalillo. It has unloaded steel bridge beams from railroad cars at the Sante Fe's Domingo siding, 10 miles northwest of the job site. In addition, this versatile unit has been traveling back and forth to another Ryan job near Carlsbad, 280 miles to the southeast. Transit Crane mobility makes it economical for use on scattered jobs anywhere in the state.

Working with the 15-B are three other Bucyrus-Erie machines. A 1½-yd. 38-B is used for excavation, pile driving, concrete pouring, and steel handling; a 22-B crane for various lifting jobs; and a 19-B — a veteran with 17 years of service behind it — is serving a concrete mixing plant at the job site. "This rig," J. H. Ryan says, "has demonstrated its reliability and economy by a minimum of downtime since it was first purchased back in 1938."

Proves Value of Individual Design

One reason for such performance is this: Bucyrus-Erie individual design for each model in its excavator and crane line. Front end, main machinery, power unit, and mounting are all perfectly matched to the machine's rated digging or lifting capacity. Perfect matching of machine to load contributes to the durability and ruggedness Mr. Ryan is talking about.

There are other reasons, of course, and your Bucyrus-Erie distributor will be glad to discuss them with you. For complete details on ⅜ to 4-yd. excavators, see him today! 173E55C

Later, the Transit Crane was used to unload steel for the three bridges from railroad cars.

Driving the steel piling for a bridge was only one of many jobs handled by this 38-B machine.

75 YEARS OF SERVICE TO MEN WHO SHAPE THE EARTH

1880 1955

Equipment You Ought to Know About

A-C Bottom Dump

Manufacturer: Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Claims: Allis-Chalmers has added a hydraulically operated bottom dump motor wagon, the TW-360, to its line. The 47,000 pound unit is powered by the Allis-Chalmers 280-hp diesel engine, providing at 2,000 rpm forward speeds ranging from 3 mph in first to 20 mph in fourth gear. Reverse speed is 3.1 mph.

The motor wagon, with a 22-ft. wheel base, has a 22 cu. yd. heaped and a 17 cu. yd. struck capacity, or 26 tons. Its overall length is 35 feet 10½ inches; width, 11 ft. 3¼ in.; and height, 10 ft. 1½ in.

When loaded, the TW-360 has a 22¼ in. front axle clearance. Its hopper, when empty, has a 31½ in. ground clearance; when loaded, 29½ in. Clearance with doors open is 20½ in.

The wagon portion of the unit is 12½ ft. long and 8 ft. 5 in. wide at the top and 11½ ft. long and 5 ft. 8 in. at the bottom. Wagon depth is 6¼ ft. The door opening is 5 ft. 8 in. x 11½ ft. Overall height of the wagon is 9 ft. 9½ in.

TW-360 engineering features include two-speed hydraulic steering; 24-volt electric system; four-wheel air brakes, each 22 x 7 in., and contacting area of 1,400 sq. in.; and one-lever control to operate doors which retract along the sides of the body. Nearly straight wagon sides eliminate bridging of the earth.

Selective steering on the TW-360 is provided by a controlled flow system through a single hydraulic valve. Low pump pressure is utilized. Full movement of the steering wheel utilizes full pump pressure.

The TW-360's new direct electric starting system permits key-control of the complete ignition system. When the key is out, the motor wagon cannot be started.

Hydraulic Starting System

Manufacturer: Allison Division, General Motors Corp., Indianapolis, Ind.

Claims: A new hydraulic starting system for diesel engines has been introduced by the manufacturer.

Called the "Hydrostarter," the starting system consists of a hydraulic motor, a piston type accumulator, an engine driven pump, a reservoir and a manual pump. No outside source of energy is needed. After the accumulator has been loaded and sealed with an inert gas, an engine-driven pump maintains pressure and the manual pump permits emergency recharging.

The "Hydrostarter" was specially engineered, says Allison, to operate in remote installations where cold weather and frequent periods of equipment inactivity can be detrimental to conventional electrical starting equipment.

The motor extends slightly more than nine inches from the engine flywheel housing. It can be coupled to practically all diesel engines up to 300-hp in the same way as a conventional electric starter. It may be used on engines operating cranes, winches, shovels, draglines, locomotives, ships, trucks, tractors and on such off-highway equipment as road graders, rollers and compactors.

Two Mack Models

Manufacturer: Mack Trucks, New York, N. Y.

Claims: The manufacturer has introduced two new models—the gasoline-powered B-60X (shown here) and the diesel-powered B-61X—for heavy dumper work. They are rated at 46,000 pounds gross vehicle weight and are

"She said **clam** up, not **come** up!"

offered with a 158½-in. wheelbase, adapted to 10 or 11-ft. dump bodies. Standard tires are 11.000-24, 14-ply, single front and dual rear, on 8.5 rims, mounted on steel-spoked wheels.

The gasoline-powered model has Mack's Thermodyne EN-464A engine, of 185 horsepower. There is a choice of the standard five-speed, direct-in-fifth transmission, or a nine-speed Duplex overgeared wide-range type. The diesel-powered model uses the Mack Thermodyne diesel, END-673, of 170 horsepower, with a choice of a five-speed, direct-in-fifth as standard, with the option of a Duplex, wide-range nine-speed overgeared transmission.

Rear axles in both models are massive Dual Reduction units, equipped with radius rods and torque arms. Service brakes are air-actuated, with a total area of 710 square inches, the rear drums being 17¼ x 6 in. The hand brake is of the internal-expanding type, located on the transmission tailshaft with 139 square inches of area.

Frames are of pressed chrome manganese steel, heat-treated, in double channel form, 10½-in. deep, with 3¼-in. flange, both inside and outside rails ¼-in. thick, giving a section modulus of 21.9. They are braced with channel cross-members with wrap-around, broadly-spread gussets.

The cab and the entire front-end sheet metal assembly is unitized as a single, independent structure, supported from the frame by rubber supports in diamond formation.

The driver's seat in the welded-steel cab is fully adjustable in all directions. Instruments are grouped on a pull-out panel. All fuses are grouped on a panel exposed when the glove-compartment door is opened.

New Cat Traxcavators

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Claims: Caterpillar has added the second and third new Traxcavators to its line of tractor-shovels. They are the No. 955 (see page 48), which utilizes a 1½-cu. yd. bucket, and the No. 933, which has a 1-cu. yd. bucket.

Although many parts of the No. 955 are used on the Cat D4 crawler tractor, the general appearance and location of major items, such as the seat, are not the same. The seat location on the No. 955 with respect to the D4 is approximately 11¾ inches higher and 4¾ inches forward; with respect to the Cat HT4 tractor-shovel, the seat is 9½ inches higher and 11⅛ inches forward.

One of the outstanding features of the No. 955, according to Caterpillar, is the tilt-back characteristic which enables the operator to tilt the bucket back when it is in any position. The bucket can be tilted as much as 40° at the ground line.

The bucket can be driven into pile, tilted back and a full load obtained in one pass without declutching, says Caterpillar. In excavating or stripping operations, depth of cut can be controlled with tractor in motion without stalling the engine. Horizontal tractor push and upward hydraulic thrust can be accomplished simultaneously. The bucket

Continued on page 48

IT'S Sauerman... for the latest word*... in MODERN MATERIALS HANDLING!

Upper left: 4-cu. yd. Crescent Scraper excavating from a river bottom, brings in a load of stone with very few fines for a western sand and gravel company.

Upper right: 2-cu. yd. Slackline Cableway spanning an average of 450 feet, lifts and conveys from an underwater deposit to a high hopper at the rate of 75 tph.

Lower left: 8-cu. yd. scraper machine is stockpiling 300 tons per hour, over an arc of 450 feet radius in a 225,000-sq. ft. storage area. Tall tower is remotely controlled from elevated cab above hopper.

Lower right: 2-cu. yd. Crescent, working between a fixed point head and movable tail tower, reclaims phosphate from all points about the periphery of a roughly semi-circular storage area.

Sauerman systems are providing efficient, economical materials handling at installations throughout the world —

DRAG SCRAPER: for pit or hill excavation, reclamation or general handling of materials, wet or dry. Serves as rapid, long range conveyor. Sizes ⅓ to 15 cu. yds.

SLACKLINE CABLEWAY: for deep digging—especially underwater—and conveying to a high delivery point. Reaches down a hundred feet or more . . . spans up to 1000 ft. . . . sizes ½ to 3½ cu. yds.

DRAG SCRAPER STOCKPILER: for profitable handling of sand and gravel, ores and chemicals. Low on first cost, plus economical one-man operation.

Call on Sauerman's experienced engineers for the size and type system best suited to your excavating, lifting or materials handling requirements. Write for catalogs.

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FOR Big Jobs Ahead

Genuine profit and efficiency gains await the contractor who gets set now for big jobs ahead. Here are a few of them:

More time to compare and analyze equipment more carefully and thoughtfully.

More time to work out financing details without delays.

A chance for your men to become more familiar (and more productive) with new equipment before it goes on tight-schedule jobs.

Opportunity to give new equipment its "shakedown" runs before big, fast-moving jobs begin.

Greater availability of equipment. Greater assurance of getting all front-end equipment you need before the rush starts.

Greater availability of erection men to work closely with your men in assembling and training.

P. S. "Get Set Now" is good advice on your present MARION equipment — review your replacement parts needs — get genuine MARION parts ordered now so you'll really be set for the jobs ahead.

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Gentlemen: Please send literature on sizes of machine checked.

MACHINE	SHOVEL CAP. CU. YD.	SHOVEL BOOM LENGTH (EFF.)	HANDLE LENGTH (OVERALL)	MAX. CRANE BOOM LENGTH	MAX. CRANE RATING IN TONS @12' RAD. EXCEPT AS NOTED CRAWLER	TRUCK	WAGON	HOE CAP. CU. YDS.	ASK FOR BULLETIN NUMBER
MARION 32-M	¾	19'-6"	16'-4"	80'-0"	*17½	*25	*25	¾	416
MARION 43-M	1	22'-6"	16'-4"	100'-0"	*27	*35	—	1—1¼	415
MARION 362	1½	24'-8"	18'-2"	100'-0"	37	—	—	1½—2	398-D
MARION 372	—	—	—	100'-0"	43	—	—	—	—
MARION 83-M	2	24'-8"	18'-2"	120'-0"	60	—	—	2—2¼	414
MARION 87-M	—	—	—	140'-0"	75	—	—	—	—
MARION 93-M	2½	27'-4"	20'-0"	120'-0"	80	—	—	—	397-E
MARION 101-M	3	27'-4"	20'-0"	120'-0"	84	—	—	—	417
MARION 111-M	4	32'-0"	23'-8"	120'-0"	169	—	—	—	402-B

*Rated at 10' Radius in Accordance with General Practice.

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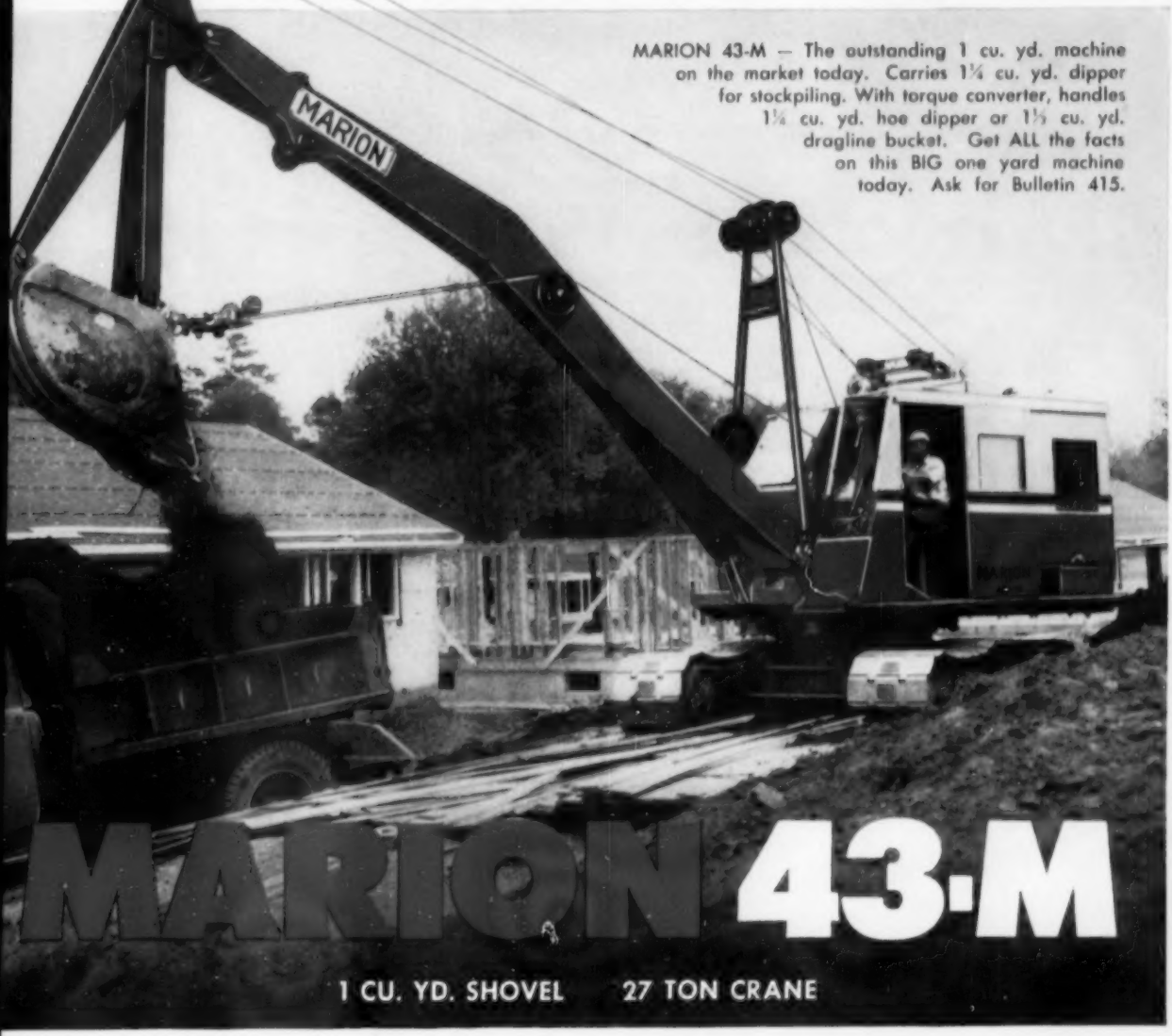

MARION 43-M — The outstanding 1 cu. yd. machine on the market today. Carries 1¼ cu. yd. dipper for stockpiling. With torque converter, handles 1⅛ cu. yd. hoe dipper or 1½ cu. yd. dragline bucket. Get ALL the facts on this BIG one yard machine today. Ask for Bulletin 415.

MARION 43-M

1 CU. YD. SHOVEL 27 TON CRANE

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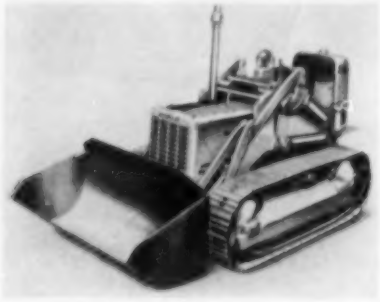
POWER SHOVELS FROM ½ TO 60 CUBIC YARDS • DRAGLINES • CLAMSHELLS • LOG LOADERS
PILE DRIVERS • WALKING DRAGLINES • CRANES, CRAWLER & RUBBER MOUNTED • BACKHOES

New Equipment . . .

Continued from page 45

can be alternately tilted and leveled while pushing to help work its way into the pile.



Heaped loads can be obtained at the ground line or from shallow windrows. The center of gravity of the loaded bucket moves back toward the tractor as the bucket is tilted back.

The full-flow hydraulic oil filter on the No. 955 is mounted on the left fender. The hydraulic valve and tank is fastened to the right fender. Hydraulic cylinders are located above the tracks.

Long track roller frames are used. Three bar grouser track shoes supply traction for shovel usage.

Batteries for either 6 or 24 volt starting systems are located beneath the fuel tank at the rear of the unit.

Radiator guard, hood and side doors are mounted to the shovel frame and may be removed with the frame as a unit. Full width radiator core and jacket water-cooled oil cooler affords ample engine cooling under heavy loads and high temperature conditions.

Improved dumping clearance is provided for loading trucks. Clearance with the No. 955 is 6¼ inches greater than with the HT4.

The spill plate portion of the bucket is of double thickness and extends high up for spillage protection. The replaceable cutting edge is of hardened steel and the bucket contour offers a flat bottom section. Indicator blocks and pointers are readily visible to the operator.

Diesel engine and gasoline starting engine are started from the operator's seat. A single lever starting engine clutch and pinion control is standard equipment, as is a 6-volt starting system for the starting engine. Also available as an attachment is 24-volt direct electric starting of the diesel engine, with four 6-volt batteries being used.

The drawbar is a rigid, non-swinging type which protects the final drive oil filler spouts. A 45-gallon fuel tank is used.

The No. 955, a 70-hp Traxcavator, is equipped with an oil-type flywheel clutch. It may be removed without disturbing the engine or transmission. Two reverse speeds up to 264 fpm and four speeds up to 607 fpm are available.

The overall dimensions of the No. 955 are: length, 15 ft. 1¼ in.; width, 80 ft.; height, 82⅛ in.; ground clearance, 13 7/16 in.; weight, 21,480 lbs.

The No. 933 Traxcavator is in the Cat D2 crawler tractor class.

All of the design advantages incorporated in the No. 955 Traxcavator have been included in the No. 933, says Caterpillar, including: unit design, 40° bucket tilt-back at ground level, excellent horsepower-to-weight ratio, advanced hydraulic system, large lifting capacity, good balance and stability as well as operator convenience and visibility, fast response to controls, in-seat starting and oil flywheel clutch.

Box section track roller frames are used. A five-roller track frame and a 54-in. gauge are used. A 37-section track chain, using 12-in. three bar grouser track shoes, also is used.

A larger diameter fabricated disc-type idler is standard equipment. The No. 933 has a 45-gallon fuel tank.

The seat location is 10⅛ inches higher than the D2 seat.

The vane-type hydraulic pump is driven from the front of the engine. The control valves are mounted inside the sealed hydraulic reservoir system.

In-seat starting, employing either a gasoline starting system, equipped with 6-volt electric starting or a 24-volt direct electric starting system is available.

The No. 933 has reverse speeds up to 264 fpm and four forward speeds up to 528 fpm.

Overall dimensions of this 50-hp Traxcavator are: length, 13 ft. 10 in.; width, 70 ft.; height, 75½ in.; ground clearance, 10 ft.; weight, 15,750 lbs.

"Hey, Joe! What do you need two air hoses on that side for?"

Sherman Reversing Transmission

Manufacturer: Sherman Products, Inc., Royal Oak, Mich.

Claims: The manufacturer has introduced a reversing transmission for use on Ford tractors.

The unit provides five forward and five reverse speeds, enabling fast shuttle operations of the tractor for maneuvering into position or working with front-end equipment.

Specially designed for use with the

Sherman fork lift attachment or with loaders, scrapers and dozer blades, the new reversing transmission incorporates the same speeds in reverse as those now available in forward gear.

Constant mesh, helical gears and anti-friction type bearings are used throughout the unit.

The transmission has been engineered for installation on Ford tractor models 640, NAA, 2N, 8N and 9N.

Nelson Portable Heater

Manufacturer: American Air Filter Co., Inc., Louisville, Ky.

Claims: The manufacturer will market this fall a "Thrifty" model portable heater under the Herman Nelson trade name.

The heater is fired with ordinary fuel oil, but will burn gasoline when outdoor temperatures fall below the firing range of fuel oils. The heating capacity is manually controllable from 50,000 to 170,000 BTU per hour. Heated ventilation air is discharged under pressure by means of an electric motor-driven blower. The heater may be used indoors or out. Canvas ducts may be used to spot heat where desired. Combustion gases may be vented separately to the outdoors whenever safe practice requires that precaution.

I-H Portable Generator

Manufacturer: International Harvester Co., Chicago, Ill.

Claims: The manufacturer this fall is displaying and demonstrating its Electrall portable generator, an attachment for International trucks. The attachment provides standard 60-cycle power anywhere a truck can travel.

Output of the Electrall, which is operated by power takeoff from the truck's engine, is 12,500 watts. It will handle up to a 10-hp electric motor,

Bigley Bros. Inc. of New York City have earned a reputation as specialists in steel girder transportation.

Among several interesting jobs were the hauling of all the steel for the United Nations Building, the New York City Post Office and New Jersey Turnpike Bridges.

Typical of girders hauled up to 110 feet long weighing as much as 95 tons is this girder for the New York Through Way. The front end is mounted on a 75 ton Rogers Low Bed Trailer with the rear on a 35 ton Rogers Pole Trailer.

The confidence displayed in Rogers Trailers by outstanding contractors and riggers suggests that you should thoroughly investigate this complete line before purchasing any such equipment.

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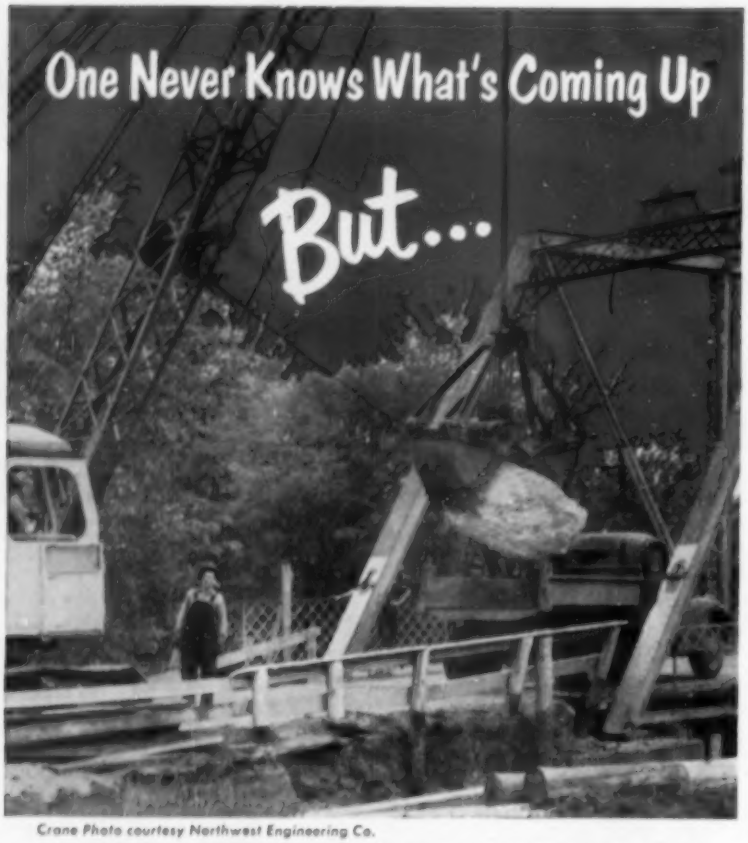
Divided bed, tilt deck trailer with gooseneck



Crane Photo courtesy Northwest Engineering Co.

UP IT COMES
If it's an OWEN

Experienced contractors can determine with reasonable accuracy the general digging conditions they face, but they can hardly anticipate encountering unusual conditions such as illustrated.

If their digging equipment embodies the needed factors of extra power and strength, these problems are "taken in their stride" and the object is removed with out delay.

Owen, through long years of specialized experience, anticipates such difficulties in the design, engineering, and construction of their buckets. This is one of the factors that accounts for the dominant position that Owen buckets hold in excavating operations today.

"A mouthful at every bite"

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Branches: New York, Philadelphia, Chicago, Rochester, Calif., Fort Lauderdale, Fla.

depending on its applications. It features plug-in outlets for alternating current 110 or 220 volt single phase, or 220 volt three phase.

The Electrall is factory-installed optional equipment on International series R-110, R-120 and R-130 pickup trucks. It also is available for installation on larger models. Mounted in the truck bed, directly behind the cab, it is belt driven by an independent power takeoff gear from the transmission. Belt tension is adjustable.

The Electrall's controls are located on the instrument panel of the truck. Current generated by the Electrall is turned on or off by a switch at the Electrall control panel.

Weight of the generator is 325 pounds. It occupies an area 22 inches long, 20 inches wide and 20 inches high.

International Harvester engineers directed the development of the Electrall and field-tested it. General Electric Co. designed and made the specialized electrical equipment involved.

Euclid Crawler, Scraper

Manufacturer: Euclid Division, General Motors Corp., Cleveland, Ohio.

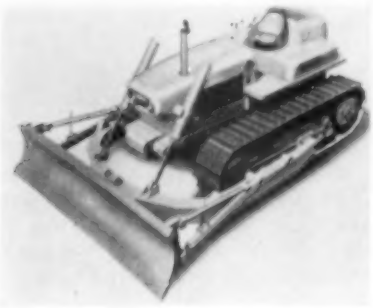
Claims: Shown publicly for the first time at the General Motors Powerama in Chicago were the C-6 crawler tractor and the S-12 overhung engine-type rubber-tired tractor scraper.

The C-6, joining the 388-hp twin-engine TC-12 crawler introduced last year, is the second model of a projected line of new crawler tractors being developed by Euclid.

The S-12, a 12-yd. struck capacity self-propelled rubber-tired scraper of

the overhung engine type, is the fourth Euclid model of this type to be introduced. It joins the S-7, S-18 and TS-18.

The C-6, in effect, is a half-section of its big brother, the TC-12, which is powered by two 6-71 Detroit Diesel engines. The C-6 employs a single 194-hp 6-71 engine. Its operation will be similar to that of conventional tractors. It will have the same type styling, controls, automatic track tensioning, Euclid planetary final drive gearing and rear mounted swing down radiator as featured on the TC-12. The tracks are driven through an Allison torque converter and Allison Torqmatic transmission. It has three speed ranges forward and three in reverse, with a top speed of 8.3 mph. Weight of tractor without attachments or mounted equipment is 34,000 pounds.



The S-12 Scraper is powered by a 218-hp engine, has a standard transmission with five forward and one reverse speeds, hydraulic steering and scraper controls and no-spin differential. It uses four section offset cutting edges on the scraper bowl which are identical, reversible and interchangeable, and has Euclid planetary final drive gearing in the tractor drive axle. Tires are 26.5 x 25 and are 26 ply.

Plastic Coated Cable

Manufacturer: Macwhyte Co., Kenosha, Wis.

Claims: "Plastic-Galvanized" or "Plastic Stainless," the manufacturer's new plastic coated cable, is available in sizes 1/16 x 1/8 in. to 1/4 x 3/8 in., inclusive, in transparent green or opaque white. Strengths are from 490 to 7,000 pounds.

The new cable is either a preformed galvanized steel or stainless steel wire rope, coated with flexible plastic. The thickness of the plastic coating varies with the diameter of the rope.

The plastic coating does not affect the flexibility of the rope adversely, says Macwhyte. It resists sunlight, oxidation and is resistant to most acids, bases, salts, oils and greases, except hydrofluoric acid and methyl ethyl ketone.

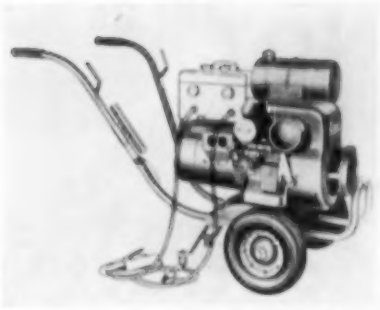
Onan Generating Plant

Manufacturer: D. W. Onan & Sons, Minneapolis, Minn.

Claims: A lightweight, 2,500-watt electric generating plant, designed with special external modifications to operate any transformer-type AC-welder up to 150 ampere rating, has been announced by the manufacturer.

Designed as a portable source of AC power, the unit combines the air-cooled Onan Model 205AJ-1M, 2,500-watt, 115-volt, 60-cycle, AC electric generating plant with any 150-amp. transformer-type welder.

External modifications of the plant include a three-pole receptacle for plug-in of any transformer-type AC welder. The unit weighs 152 lbs. It is powered by an Onan-built, single-cylinder, four-cycle, air-cooled gasoline engine. The generator is an Onan-built two-pole revolving armature, inherently voltage-regulated type, directly connected to the engine for permanent alignment. The



unit is manually started with a pull rope; a recoil pull rope starter is optional.

The generator also is available mounted on a lightweight, two-wheel dolly or a welded tubular steel-carrying frame.

Tractor Adapted Ditcher

Manufacturer: Shawnee Mfg. Co., Topeka, Kan.

Claims: The manufacturer has announced that the Shawnee Scout Model 70 ditcher has been adapted for installation on TerraTrac 300, 400 and 500 crawler tractors. Several new features

Continued on page 55

"Tomkins . . . you might show a bit more confidence in our work."

NOT in the Contract

From Britain comes the story of several Englishmen who were seated in a cocktail bar at a table near two pretty girls and their maiden aunt.

A couple of the lads got up and approached the girls. "How about doing the town tonight?" they asked.

The girls looked at their aunt, who nodded approval, and then said, "all right."

"Splendid! What time shall we call?"

"Oh—eight-ish," said one.

"Make it nine-ish for me," said the other.

The aunt looked over at the next table hopefully, "Tennish, anyone?"

With much sweating and knuckle-banging—and an occasional muttered curse—an unhappy husband was changing a flat tire. His wife was deeply cut by his unappreciative response to her thoughtful suggestion.

"Dear," she said, "why don't you borrow some air from another tire?"

They were picking the rice out of their hair.

"Honey," said the cattleman, "in that thar ceremony, I promised the parson to cherish you. What does cherish mean, I asked?"

"Oh," replied the bride, "now that you're roped, tied and branded, it simply means, don't forget who you belong to, darlin."

The young lady eyed her escort with disapproval. "That's the fourth time you've gone back for more punch, Albert," she said coldly. "Doesn't it embarrass you at all?"

"Why should it?" the young man shrugged. "I keep telling them I'm getting it for you."

"I've got to have a fire-resistant dwelling."

Construction Boss: "You can't come in here and ask for a raise just like that. You must work yourself up."

Employee: "I did. Look, I'm trembling all over."

Doctor: "Your husband must have rest and quiet. Here's a sleeping powder."

Wife: "When do I give it to him?"

Doctor: "Don't give it to him—take it yourself."

Upon reaching home in the wee hours of the morning, a gentleman who had over-indulged was having difficulty in unlocking his front door. Just then the milkman came along and offered help, saying, "May I hold the key?"

"Naw," replied the confused fellow. "I can hold the key—you hold the house."

A man walked into a restaurant and left the door open. A big fat man called out: "Shut the door! Were you brought up in a barn?"

The man closed the door, sat down and began to cry. At this the fat man looked uncomfortable and went over to the sorrowful one. Said he, "I'm sorry, I didn't intend to hurt your feelings."

"I'm not crying because you hurt my feelings," was the reply, "but the fact is, I was brought up in a barn and every time I hear a jackass braying it makes me homesick."

The men from a nearby construction camp had come to town for their usual Saturday night fun and the next day one of them met a friend staggering down the street with two black eyes.

"For the love of Mike, where did you get the two black eyes?" asked the startled friend.

"Aw, shucks," replied the other, "I got 'em at a party last night. I could have got plenty more, too, but I didn't have no place to put 'em."

The collection department of a credit firm tried a new method on a slow-paying account.

"Dear Mrs. Smith," the letter began, "what would all your neighbors think if we came to your town and repossessed your car?"

In time the letter came back with a message scrawled at the bottom. "I have taken up this matter with my neighbors," it said, "and they think it would be a lousy trick."

Nearly 200 "EUCS" already at work on the

Model 637D "Euc" getting a heaped load of 20 cu. yds. at site of Long Sault Dam near Massena, N. Y.

Although work on the St. Lawrence Seaway and related New York Power Authority projects is just getting under way, close to 200 Euclids are already "digging in". They're helping build cofferdams, making diversion cuts, relocating highways and railroads, and preparing power house sites. Other "Eucs" are doing similar jobs on the Canadian side of the river.

One of the key projects in the whole Seaway program is construction of Long Sault Dam near Massena, N. Y., a joint venture sponsored by Walsh Construction Co. Others who have pooled their men and machines on this 7 million yard job are B. Perini & Sons Co., Morrison-Knudsen Co., Peter Kiewit Sons Co. and Utah Construction Co. . . . some of America's leading contractors. At present 50 "Eucs" are working on this one contract and others will be added as work progresses.

Eight of the Euclids are 22-ton Rear-Dumps with 300 h.p. engines and Torqmatic Drives. They were selected for this job because of their ability to haul big loads at fast travel speeds day in and day out . . . with less down time for servicing and repairs. That's the kind of performance that has made "Eucs" the preferred equipment for hauling heavy excavation on the toughest jobs everywhere . . . it's one of the important reasons why ***EUCLIDS are your best investment.***

Torqmatic Drive and 300 h.p. make this "Euc" a top performer. Torque Converter and semi-automatic transmission eliminate manual shifting—utilize full engine power at all times.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

EX-LAFFS
By Marvin Towarekh
Sat 5
"On second thought — get my suit. I think I'll go down today after all."
"Tell 'em I can't work today, I'm repairing things around the house and working in the yard."
"And I'm not moving until you make this month's payment on your T.V. set."
FINANCE CO.
"He bit his tongue."
EXCAVATING ENGINEER

New Equipment . . .

Continued from page 51

have been added to the Scout for the TerraTrac crawler tractors, says Shawnee. Included are individually-controlled self-leveling hydraulic outriggers. Also, if a tractor is equipped with a Terra-loader in conjunction with the Scout 70, both units can be operated off the loader pump. Removal of four bolts and two pins permits quick removal of the Scout.

The Scout ditcher digs 12 ft. deep, loads 8½ ft. high and reaches 14 feet.

Ford Rear Blade

Manufacturer: Tractor and Implement Div., Ford Motor Co., Birmingham, Mich.

Claims: A 6-ft. adjustable rear blade designed to mount on all Ford tractors and featuring tilt, pitch and offset adjustments and blade angling has been announced by the manufacturer.

The rear blade angles 45° each side of center with seven-hole stops and tilts 40° each side of center with nine holes. Blade pitch is adjustable to 10° plus or minus by means of an adjustment at the rear of the blade, with intermediate pitch adjustments made with the Ford tractor's adjustable top link.

Available as accessories are gauge wheels, end plates, skid shoes and ditching points.

Contractors may use the blade to grade yards and lots, drives, roadsides and building areas, to backfill gullies, ditches and excavations, to ditch for drainage and to scrape snow.

The reversible and replaceable cutting edge is of high carbon steel. The frame is of welded steel.

Cutting width and overall width are 72 inches. Transport clearance when raised by the tractor hydraulic system is 18 inches. The overall length is 48 inches; overall height, 48 inches; blade height, 17 inches, and weight 360 pounds.

"I like a milk shake with my lunch."

Stationary Compressors

Manufacturer: Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis.

Claims: The manufacturer has announced a line of two-stage, air-cooled, electric motor driven compressors. These 50, 75, and 100-hp stationary compressors have displacements of 260, 415 and 550 cfm at 125 psi operating pressure.

According to Le Roi, the three-cyl-

Here's a typical service record of
BLAW-KNOX
CLAMSHELL BUCKETS

This 3-cu. yd. lever arm bucket is still in service after 14 years on the job . . . a typical work record for Blaw-Knox Clamshell Buckets.

Over 50 years experience has taught Blaw-Knox engineers the fine points of bucket manufacture . . . where to build in the extra strength to withstand the abuse of severe conditions . . . how to design buckets to meet the exacting needs of an exacting industry . . . how to analyze *your* job requirements to help you select the specific size, weight and type of bucket you need.

There are Blaw-Knox Buckets designed for excavating, dredging and the rehandling of over 480 listed materials! Ask your Blaw-Knox distributor to help you select the right bucket for your job.

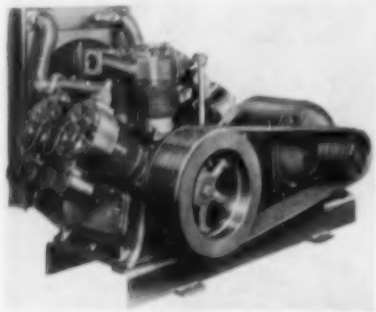
BLAW-KNOX

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
Pittsburgh 38, Pa.
Offices in Principal Cities

ASK ABOUT THE BLAW-KNOX "Complete Package" OF CONCRETE PAVING AND READY-MIX EQUIPMENT

Highway and Airport Paving Forms • Precision Subgraders • Aggregate and Bulk Cement Batching Plants • Concrete Spreaders and Finishers • Concrete Pavers • Road Wideners • Base Pavers • Bituminous Pavers and Finishers • Tandem and Trench Rollers • Truck Mixers • Truck Mixer Loading Plants • Concrete Buckets • Curb, Gutter and Sidewalk Forms.

inder 50S2 and six-cylinder 75S2 and 100S2 compressors have a balanced design which minimizes vibration and noise.



Cylinders are made of alloy iron and are cooled by a high-speed, belt-driven fan which draws air through a sectional-core intercooler and directs air over the cylinders and heads. Each bank of cylinders has individual intake filters. Forced feed lubrication is by a positive plunger type oil pump.

Standard equipment of these belt-driven compressors include a Dual-Control which gives the operator a choice of start-and-stop duty of both motor and compressor or a continuous running of motor with intermittent compressing. The latter selection permits the compressor cylinders to unload instead of compressing when desired pressure is reached.

Self-Propelled Bantam

Manufacturer: Schield Bantam Co., Waverly, Iowa.

Claims: The manufacturer has introduced a self-propelled ⅜-cu. yd., 6-ton shovel-crane for materials handling and industrial applications, the CR-35.

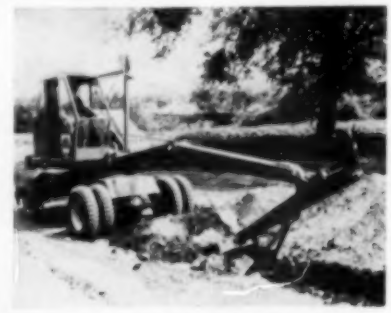
The CR-35 has a 12,000 lb. lifting capacity and an outside turning radius of 19½ ft. It has two-speed independent travel. The steering mechanism and brakes are controlled hydraulically. The travel mechanism and upper machinery operate on the mechanical control principle.

Specifications include: wheelbase, 112 in.; overall length, 173¼ in.; overall width, 96 in.; overall height, 125 in.; ground clearance, 15 in.; height of frame, 38½ in.; drive, 4x2; tire size, 8.25x20.

A fully enclosed bevel gear drive is used at the lower end of the vertical drive shaft to transmit drive to the rear axle.

The front outrigger is welded permanently to the frame. The beams extend 22 feet beyond the box. The box and frame section of the rear outrigger are fastened to the frame proper by two pins and two bolts so that the rear box and frame section can be removed when using excavating attachments.

A crank-type parking brake is hand-operated from outside the operator's cab. It locks the mounting in place for servicing and parking.



The full revolving self-propelled rig has a swing speed of 6.65 rpm and line speed of 176.5 fpm. The CR-35 has anti-friction bearings, machine-cut gears, internal expanding band type "snap-in" clutches with molded linings, external contracting brakes and four rollers and four cam-type adjustable hook rollers to distribute load weight evenly over the trunnion base.

The all-vision cab offers 360° visibility. Working parts are easily accessible, the manufacturer claims.

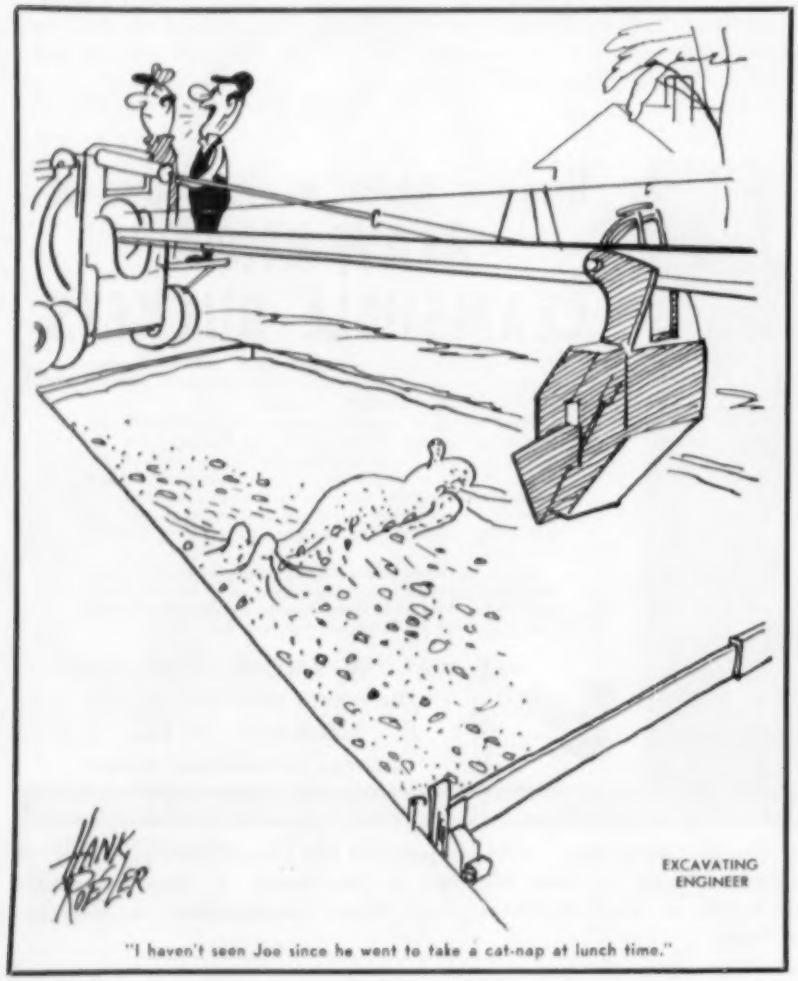
Available attachments include crane, clamshell, draglines, shovel, trench hoe, magnet, grapple, pile driver and backfiller.

Multi-Purpose Generator

Manufacturer: Maginniss Power Tool Co., Mansfield, Ohio.

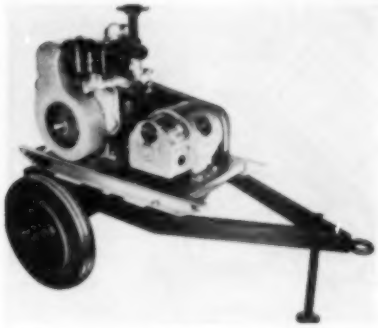
Claims: A hi-lectric multi-purpose generator, driven by a gasoline engine, has been announced by Maginniss. The Model HG-4B-TF is powered by a 12-hp, 2-cylinder, air-cooled engine which provides full generator output at 2,200 engine rpm.

The generator, 120 volt, 180 cycle, 3 KW and V-belt driven, simultaneous-



"I haven't seen Joe since he went to take a cat-nap at lunch time."

ly will operate two Maginniss Model HCV-3, HPV-3 or HFSV-3 hi-lectric concrete vibrators or one vibrator, 1,000 watts of lighting and one universal tool. Used as a light plant only, the generator will provide 3,500 watts of power for flood and spot lighting, claims the manufacturer.



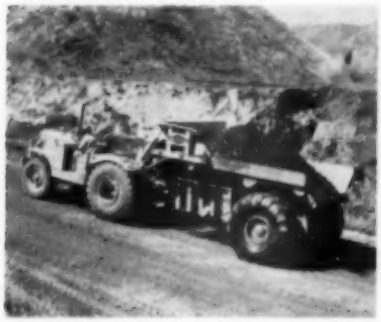
Model HG-4B-TF is furnished on a skid base mounted on a two-wheel rubber-tired trailer for over-the-road towing.

16-yd. Movall

Manufacturer: C & D Mfg. Co., Perkins, Calif.

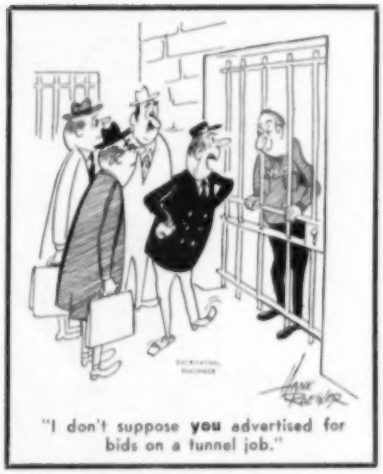
Claims: The manufacturer has announced a multi-purpose Movall Wagon, the RD15, for use with Caterpillar DW15 tractors.

The new Movall has a heaped capacity of 16 cubic yards and a struck capacity of 12 cubic yards. It has a carrying capacity of 22 tons. It is intended for use with DW15 tractors now in the field or with new prime mover units. Under favorable job conditions, it can also be used with Cat DW10 tractors.



The new wagon has many features of the 25-yd. Movall. These include the positive cable-controlled (out the rear) ejection which enables Movall wagons to handle any material that can be top-loaded, including dirt, mud, ore, aggregate and surfacing materials.

Other RD15 features, according to C & D, are controlled spreading or dumping action; comparatively light construction of high tensile steel; large loading target area (10 x 16 ft.); turning width of 27 feet, and dumping time of 11 seconds.



"I don't suppose **you** advertised for bids on a tunnel job."

The dumping principle provides safety for dumping over the edge of a fill by permitting the load to be dumped with all brakes locked, without raising the body and with the drive wheels well away from the edge. The low center of gravity permits dumping at any travel speed.

Standard Caterpillar No. 27 cable controls are used with the new Movalls, making possible a quick changeover from scraper units. Optional equipment includes ejector side-boards and a detachable rock guard.

Michigan Hydraulic Brakes

Manufacturer: Clark Equipment Co., Benton Harbor, Mich.

Claims: Four-wheel hydraulic brakes, previously available only on large machines in the line, are now standard equipment on the manufacturer's Model 75A tractor shovel.

The 75A has a 1-cu. yd. bucket capacity and weighs 12,750 pounds. With four-wheel drive and rear-wheel steering, it is offered with either a 77-hp gasoline engine or an 80-hp diesel engine. A 12-volt electrical system facilitates starting in cold weather.

Circle Hose Clamp

Manufacturer: Circle Clamp Corp., New York, N. Y.

Claims: Circle has produced a hose clamp which it claims can be fixed in place in three seconds with an ordinary pincers.

The clamp can be used with motors,

STURDILITE
Heavy-Duty
FLOOD LAMPS
Available in 6-8, 12-16, 24-28, and 110-120 voltages.
Rubber Mounted Base Standard Model
For Better Light • Longer Service • Lower Cost
Especially Designed for Efficient Service on
Shovels • Excavators • Drag-Lines • Roadbuilding Equipment
Locomotive Cranes • Tractors . . .
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pumps and compressors and in the manufacture of equipment for coal and ore mining, quarries, cement, smelting, building construction, road construction, tunnel construction and well drilling among other things.

The clamp is round with U-shaped folds or lugs. Smaller size clamps have two lugs; the larger ones, three. The device is slipped on the hose or part and crimped in place by squeezing the parallel sides of the lugs together with the pincers. To remove the clamp, the lugs are simply snipped off with the pincers.

The clamps are made from various ferrous and non-ferrous metals. They are available in 20 sizes ranging from ¼-in. diameter to 2½ in. diameter. Larger sizes are produced on special request. Each clamp is marked with minimum and maximum diameters of the hose or tube for which it is applicable.

Front-Dump Buckets

Manufacturer: Austin Division, Central Ohio Steel Products Co., Galion, Ohio.

Claims: The manufacturer is offering live front-dump buckets as extra optional equipment on models 2-C, 4-C, 6-C, 7-C and 8-C Austin Overshot Loaders.

According to Austin, the live front-dump bucket substantially increases the usefulness of the standard Austin Overshot Loader. With the live bucket, the Austin can be used for sanitary landfill work, excavating basements, backfilling, stockpiling and light bulldozing, in addition to digging, loading, and screening.

The live bucket is interchangeable with Austin bulldozer and front-end loading attachments.

Bucket position is maintained by one double-acting hydraulic cylinder on Models 2-C and 4-C and by two double-acting cylinders on models 6-C, 7-C and 8-C. Cylinders are controlled by a three-way valve located in the cab. Bucket tilt is 45°. Hydraulic lines are located inside structural parts.

Designed for mounting on Caterpillar D2, D4, D6, D7 and D8 Tractors, Austin Overshot Loaders are available in capacities from 1 to 4 cubic yards.

Motor Generators

Manufacturer: United States Motors Corp., Oshkosh, Wis.

Claims: A complete new line of diesel (5 KW to 200 KW) and gas-gasoline (10 KW to 150 KW) engine generators for both continuous and standby duty has been announced by the manufacturer.

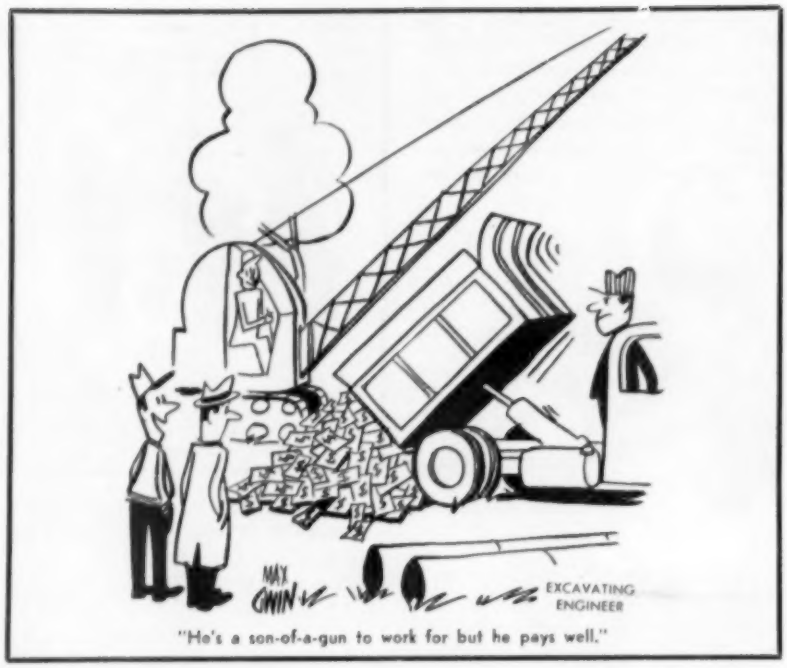
The line includes portable, mobile and stationary units with adaptations available for individual installations.

Water-Cooled Pumper

Manufacturer: Construction Machinery Co., Waterloo, Iowa.

Claims: A Model 40M, 4-in. water-cooled pumper has been announced.

Powered by a Continental F-140 water-cooled engine which develops 30 continuous horsepower at 2,000 rpm, the 40M has electric starter, battery and generator as standard equipment. It pumps up to 40,000 gph and will handle jobs such as dewatering excavations, cofferdams, sumps or basements, as well as transferring or supplying liquids.



"He's a son-of-a-gun to work for but he pays well."

RENT INTERLOCKING STEEL SHEET PILING
"FASTER from FOSTER"
ALL LENGTHS & ALL SECTIONS TO MEET ALL YOUR JOB NEEDS
Foster's lower rental rates on all standard piling sections give you a low fixed expense as an added competitive advantage when bidding on jobs. RENT: Light-weight Corrugated Steel Sheet Piling—Pile Hammers and Extractors.
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Ford Truck Line

Manufacturer: Ford Division of Ford Motor Co., Dearborn, Mich.

Claims: Two new models have been added to the 1956 Ford truck line—a T-750 tandem axle model in the heavy truck series, and a new, longer wheelbase pickup.

Gross vehicle weights extend from 5,000 pounds on the pickup to 42,000 pounds on the heavy duty tandem axle models.

For 1956, Ford's cab design introduces increased visibility of wraparound windshields and optional wraparound rear windows.

Introduced for the first time to the trucking industry are two standard safety features—a safety steering wheel and safety door latches. Seat belts are optional.

The safety steering wheel is designed with a rim three inches above the horn button to give the driver's chest added protection from the steering column in case of a crash.

Also, a new safety door latch reduces the chance that doors will open in an accident, providing occupants added protection from being thrown out of the cab.

Tubeless tires, standard equipment this year, increase Ford truck economy. Larger payloads can be carried because tubeless tires and wheels weigh less, which is important to a trucker with as many as 10 tires on his truck.

Ford's short stroke, low friction engine design has been continued this year in eight engine combinations.

Horsepower has been increased in all engines, by 12.7% in the smallest 223 cu. in. six cylinder rated at 133 hp. to 17.6% in the largest 332 cu. in. heavy duty Y-8 engine rated at 200 hp. when equipped with a four barrel carburetor.

In the medium-heavy truck series, a special heavy-duty 168 hp. Y-8 engine is available equipped with a four-barrel carburetor.

In the heavy truck series, an optional power package consists of four-barrel carburetion, dual exhausts and special cold air intake. The intake is a hood airscoop. The 332 cu. in. engine develops 200 hp. with this equipment.

Another option is a thermostatic fan which adds power to heavy trucks by disengaging the engine fan at low operating temperatures. This provides up to 18 more usable horsepower at the clutch.

Thor Ditch Tamper

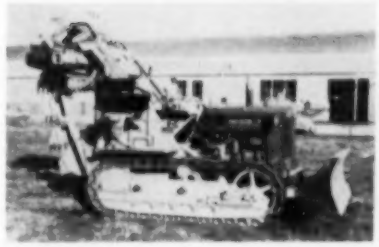
Manufacturer: Thor Power Tool Co., Aurora, Ill.

Claims: A new narrow ditch tamper which permits backfill tamping in trenches as narrow as 10 inches and operation at grade level in ditches up to five feet deep because of its adjustable handles has been announced by the manufacturer.

The Triplex Tamper, mounting three Thor air-powered tampers, is operated by one man and features close-coupled design to permit tamping in narrow gas line trenches, water line trenches, etc.

The handles, which may be adjusted both vertically and horizontally, allow tamping at any level from the surface to a five foot depth with simple, quick adjustments.

Trencher-Tractor Team



Manufacturer: Heller Mfg. Corp., Los Angeles, Calif.

Claims: The manufacturers have announced an addition to their trencher line. The Universal Trencher is now approved allied equipment for mounting on the John Deere 40 Crawler Tractor.

The new trencher has a digging depth of four feet and trenches 14, 16 and 18-in. widths.

Especially designed as a utility trencher, the Universal holds line and grade without effort, is hydraulically controlled and trenches easily in small space. Other features are cross trenchings, square trenches, and strip pipe lines. The Universal Trencher switches dirt instantly to either side and employs a heavy duty backfiller blade.

PICK A MONEY MAKER!
When you're buying a dragline bucket for your next job, keep in mind three important qualifications. First, Digging Ability . . . second, Long Life . . . third, Low Repair Expense. For more than forty-five years Omaha Dragline Buckets have passed these tests in actual work done on the job. Write for catalog giving specifications of 4 available types.
OMAHA
DRAGLINE BUCKETS
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.

Continued from page 41

jacking the elevator back into position was completed this summer by the C. L. DeLong Co., an industrial maintenance firm of Nebraska City, Nebr.

The northeast corner of Section C of the elevator rested on a sandstone ledge which extended along the center

A workman starts a 16-ft. jetting point. He is using an 80-lb. Joy paving breaker.

of the tanks to the middle of the unit. There, the section began sloping down at a 1 to 1 grade. This left most of the unit sitting on dirt. Underground seepage from the sandstone caused a poor soil condition. The elevator tipped eight inches in the southwest corner and settled 8½ inches.

The DeLong firm used a Hardsocg drill to test soil conditions and check rock ledges. Pockets and cavities in the sandstone were filled to cut off water seepage. Jacking points were driven down to the stone formation, where pumping began. The stone ledge was filled and sealed.

The ground around this section was stabilized to a distance of 50 feet from the base of the tank. The first row of jacking holes was placed next to each tank; the next row was located 20 feet from the base. The entire area was pumped on 20 foot centers. Then the distance between holes was halved. This process was carried one more step until the entire area had been pumped every five feet.

Pumping continued down to sand-

The DeLong firm used Hardsocg drill to test soil conditions and check rock ledges.

stone, which was found at depths from 15 to 39 feet. Ten and 16-ft. jacking points were used. When necessary, extensions were added in 10-ft. lengths. The jacking points were driven by an 80-pound Joy paving breaker.

Following the stabilization work, operations began in the tunnel under the tanks. At each tank, holes were drilled in the tunnel walls. A 1¼-in. pipe, extending 12 feet to the center of the tank, was placed and cemented in each hole. Holes were drilled in the tunnel floor each 12 feet and a 1½-in. pipe was cemented in them. The material hose was connected directly to the pipes.

To raise the elevator and stabilize the soil, 41 car loads of material were pumped through the pipes by a Model 51 Koehring Mud-jack.

Started Sept. 29, 1954, the operation required eight months.

Inco Builds Station

International Nickel Co., Inc., used the blast hole method of mining for the first time recently to excavate for an underground crusher station at its Levack Mine in Ontario. The chamber is on the 2,650-ft. level and is big enough to hold two average-sized eight-room houses.

Concreted throughout, the crusher station required an opening 70 ft. high, 26 ft. wide and 68 ft. at its longest point.

International Nickel Co., Inc., used the blast hole mining method of excavating for a huge crusher station in Ontario. The large chamber of the station is shown here.

New Trade Literature

Subject: **Diesel Engineering**

Content: *Diesel Engineering Handbook, 9th Edition*, edited by A. B. Newell, is an 835 page book serving as a basic reference guide for all industries using, servicing or manufacturing diesel engines and accessories. New chapters and also many new engine specifications listings on lightweight, high-speed diesels have been added. Coverage of the heavier diesels has been increased, with special emphasis on fuel and lube oil efficiency and economy. More than 900 separate diesel topics are reviewed in the 30 chapters. The work contains 581 illustrations. The book is priced at $8.50 in the United States and $9 elsewhere.

Where to get: Diesel Publications' Book Division, 192 Lexington Avenue, New York 16, N. Y.

Subject: **Machine Cabs**

Content: Pictured in two product illustrations sheets issued by Crenlo, Inc., are construction machine cabs—the Crenlo Model 1105 AM Winterized Enclosure and tailored cabs for Caterpillar, John Deere and International Harvester tractors, Allis-Chalmers four-wheel prime movers and a Whiting trackmobile.

Where to get: Department KP, Crenlo, Inc., Rochester, Minn.

Subject: **Pneumatic Publication**

Content: A publication devoted primarily to pneumatics, the *Ross Enginair*, made its bow in August. It will be published bi-monthly by the Ross Operating Valve Co. of Detroit, Mich., manufacturer of air valves. The first edition of 30,000 copies was circulated to design engineers, maintenance men, plant operating managers and production executives. The magazine will include application stories and a series of primer articles on the fundamentals of pneumatics. The magazine also contains a digest of current trade journal articles on pneumatics. Clark & Bobertz, Inc., an advertising and public relations agency, is editing and producing the magazine, with the co-operation of the Ross engineering staff.

Where to get: Ross Operating Valve Co., Detroit, Mich.

Subject: **McCarthy Vertical Drill**

Content: Described in a four-page bulletin is the McCarthy vertical drill model 106-24 for strip mine operation, highway construction, soil engineering and general exploration. The drill handles augers 6 ft. long up to 24 in. diameter. Field installation pictures and specifications are included for the drill and also the McCarthy vertical model 106-8 for augers up to 8 in. Ask for bulletin M-100.

Where to get: Salem Tool Co., S. Ellsworth ave., Salem, Ohio.

Subject: **Asphalt Mixing Plants**

Content: *Asphalt Mixing Plants* is a text book-style catalog which covers the hot mix, batch and portable type plants. The 16-page bulletin was published by Koehring Waterous Ltd., a manufacturer of asphalt mixing plants. The bulletin contains more than 40 photographs, charts, drawings and diagrams. The introductory text includes diagrams illustrating the most desirable and efficient layout of typical plant sites for both portable and permanent installations. Also included are charts listing general plant features of Koehring-Waterous equipment.

Where to get: Koehring Waterous Ltd., Brantford, Ont., or from Koehring-Waterous distributors.

Subject: **71-B Bulletin**

Content: A 16-page bulletin describes the Bucyrus-Erie 71-B, a 3-cu. yd. shovel. Pictorially illustrated, the booklet gives a complete description of the machine's features and a list of general specifications. The 71-B is convertible to dragline, clamshell or lifting crane and incorporates the basic engineering features and advantages of the company's current line of general purpose excavators. Among features described in the bulletin are: positive twin rope balanced crowd with rectangular inside dipper handle; strong, light boom; independent boom hoist; full air control, except for drum brakes and swing and propel jaw clutches; steering clutches and friction digging brakes spring set and air released; one-piece cast steel revolving frame; choice of four A-frames; 12 conical hook rollers, and four optional crawler mountings. Ask for bulletin 71-B-1.

Where to get: Bucyrus-Erie Co., South Milwaukee, Wis.

Subject: **Caterpillar Bulletins**

Content: Caterpillar has issued seven bulletins. *Caterpillar Attachments Provide . . .*, an eight-page booklet, describes new attachments for Caterpillar tractors and motor graders. Included are hydraulic steering boosters for motor graders, cast steel final drive cases, rolled steel crankcase guards and electric starting systems. Ask for form DE584. *Parts Needed Fast* is an eight-page brochure describing the operation of the Caterpillar parts service. Ask for form DE585. Another booklet, *Let's Take a Look at Caterpillar Final Drive Seals*, discusses the qualities of Caterpillar final drive seals. The publication also reviews the interchangeability of the seals. Ask for form DE587. Caterpillar track parts is the subject of another eight-page booklet, *How to Be Sure About Track Parts*. The booklet describes the chemical analysis of the steel for the parts and traces the path of inspection and testing of the parts. Ask for form DE586. *Filter Research, How and Why . . .* pre-

In a Hayward, there's no contact between the closing mechanism and the gravel or other materials handled. To be sure—this "no contact" feature is only one advantage. But a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

The Hayward Company, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

SLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

famous for performance since 1888

sents the story behind Caterpillar filters, from testing through final design. Ask for form DE583. A question-and-answer method is used in an eight-page booklet, *Friction Facts*, to explain Caterpillar's testing and research program on friction materials in its machines. The testing, from initial screening of materials to final field tests, is illustrated. Ask for form DE588. *Certify Your Profits* is a booklet which tries to show construction men the value of keeping accurate cost records to determine which engines produce maximum profits. Ask for form D539. Forms DE583, DE584, DE585, DE586 and DE588 also are available in French, Spanish and Portuguese.

Where to get: Caterpillar Tractor Co., Peoria, Ill., or from Caterpillar dealers.

Subject: **Hydraulic Engineering**

Content: A 582-page book, *Elements of Hydraulic Engineering*, by Ray K. Linsley, Jr., and Joseph B. Franzini, is another in the McGraw-Hill series in civil engineering. It is a basic textbook for senior civil engineering students and deals with the control and utilization of the natural waters of the earth. Hydraulic engineering is discussed as a unified field. Fundamentals common to all the special fields are covered, after which the particular aspects of each area are discussed. The book has three parts: 1, the hydrologic and legal aspects common to almost all hydraulic projects; 2, the structures required for hydraulic projects; 3, the special problems encountered in water supply and sewerage, flood control and drainage, irrigation, river navigation, hydroelectric power development and multiple purpose projects. Students are given 215 problems to solve. The book is priced at $9.

Where to get: McGraw-Hill Book Co., Inc., 330 W. 42nd st., New York 36, N. Y.

Subject: **Cummins Diesels**

Content: A 40-page booklet, *Cummins Who's Who*, serves as a directory of original equipment manufacturers who offer Cummins diesels as standard or optional power. The booklet is divided into five sections—buses; construction and mining equipment; trucks on and off highway; industrial equipment, and logging equipment. The name and address of the manufacturer is given, plus a listing of his equipment and the corresponding Cummins diesel it uses for power.

Where to get: Cummins Engine Co., Inc., Columbus, Ind., or Cummins sales or service stations.

Subject: **Manpower Needs**

Content: Two papers presented last January at the annual meeting of the Highway Research Board are contained in a bulletin. Results of a canvass taken last year to determine the present shortage of highway engineers and to obtain estimates of the number needed for an expanded program are reported in the paper, *Engineering-Personnel Needs for Highway Departments*, by M. Earl Campbell and L. R. Schureman. The canvass included state and municipal highway departments, toll-road authorities and consulting firms. It obtained information on needs of each of the major bureaus of the highway departments. *Use of Private Firms for Highway-Engineering Functions*, by Harmer E. Davis, Donald S. Berry and Wayne H. Snowden, discusses the practice of employing services of private engineering firms by state highway departments and related agencies. The general pattern of use is discussed, together with costs and selection. Bulletin price is 60 cents.

Where to get: Highway Research Board of the National Academy of Sciences —National Research Council, 2101 Constitution, Washington, D. C.

Continued on page 64

Power for three Thor wagon drills is provided by these Jaeger (left) and Schramm compressors. The first machine on the job last February was an International TD-24.

Zicuiran Dam . . .

Continued from page 27

from their milpas, lush wild tropical fruits to be had for the picking and meat paid for with pleasant hours of hunting. This means expensive turnovers for ICA.

Other workers, however, take well to their new jobs. Some develop an uncanny facility for managing tools and eventually rise to better, higher-paying jobs. This leads to a demand for more varied food and better housing. With these, the standard of living climbs.

A notable example is the day foreman. Though he neither reads nor writes, he is a wizard at handling men and speeding up work. ICA finds him an invaluable asset to its permanent personnel.

Ing. Raul Haro Velez is in charge of all Michoacan operations for ICA. The resident engineer on the dam project is Ing. Luis Zarate, who managed the Mexican side of the Falcon Dam construction on the Rio Grande River. Ing. Bernardo Quintana, president of ICA, and other high executives occasionally fly down from Mexico City where permanent offices are located.

Used for many jobs on spread was this No. 6 Caterpillar front-end shovel, shown placing backfill behind corrugated metal pipe.

Pioneer . . .

Continued from page 39

months a year the unit works. Her name is Joann Mansfield, and she is Joe's daughter.

On the rock-crushing end of his set-up, Mansfield was using the new Pioneer Model 46-VE Duplex machine with a 10 x 36 jaw and set of 40 x 22 roll crushers. On 2½-inch-minus granular base-course crushing, this unit had turned out 3,840 tons of material in a single eight-hour run. By keeping the plant area clean, by keeping engines and other components in top shape and by welding at least two hours each night on the roll crushers, Mansfield had done much to keep the plant operating at peak condition.

One of the important things, Mansfield said, was to take the best possible care of conveyor belts. Conveyor belts are one of the expensive items on a rock-crushing setup.

The exact amount of rock which Mansfield will crush this year was problematical, but it should be a sizable figure.

Paving Spread Follows

Pioneer's paving spread, which follows quickly behind the rock-production crew, is far different than the road-mixing outfit it first started out to be. Today's paving crew has a complete line of hot-mix asphalt paving equipment. According to La Casse, who runs the paving spread, the company can do two-lane, 2-in. plant-mix bituminous paving for $9,000 per mile. The average price of lower-type roadmixed pavement is about $8,000 per mile.

A visit to La Casse's paving spread quickly revealed the reason for such productive efficiency from a relatively moderate-sized portable hot plant. That reason was the extreme portability the company had built into the unit, coupled with the new policy of maintaining equipment in excellent condition.

The hot plant was a Pioneer No. 81 mixing unit, combined with a Pioneer No. 375 drier and dust collection unit. Each of these components was fully portable. The plant was 100% electrically powered, and even the General Motors diesel-electric generating set was portable. It was mounted on a small flat-rack trailer, along with a fuel tank for the engine, a circulating oil heater for keeping the asphalt hot and a small Kohler light plant for emergency night operation or repair.

The things which most pointed up the portability were the three 10,000-gallon storage tanks for asphalt and fuel oil. Each of these tanks was mounted on a rigid frame, supported by heavy rubber-tire wheels capable of carrying a load down the highway behind a semi-tractor. The fuel and asphalt lines connected to these tanks had flexible-type swing connections, reducing to a matter of minutes the piping setup anytime the hot plant moved. So portable was the outfit that it had been torn down in three hours and set up again in from eight to ten hours. If necessary, a move across the entire state of Colorado could be made in from 2½ to 3 days.

The Pioneer Construction Company's paving setup is regarded as one of the finest and most portable in the entire Rocky Mountain area. Since the plant was purchased early in 1955, it has consistently turned out a very high average every eight hours.

Summing up, it seems an undeniable fact that Pioneer will be a potent force in Colorado highway construction programs for many years to come.

BREAKER BALLS
of Ni-Hard and Semi-Steel

EAGLE Breaker Balls available of abrasion resistant Ni-Hard nickel - chromium - iron alloy for toughest jobs and of tough semi-steel for regular jobs. Pear shaped, with easily replaced hook, in 5 sizes: 1500 lbs. to 8000 lbs. Spherical in 6 sizes: 1275 to 6350 lbs.

BULLETIN 952
describes Breaker Balls, Pile Hammers, Line Weights. Catalog 55 covers aggregate, stone and ore washers and classifiers.

Since 1872

EAGLE IRON WORKS

EAGLE
IRON WORKS
264 Holcomb Ave.
Des Moines,
Iowa

New Literature . . .

Continued from page 62

Subject: **Conveyor Belt**

Content: A new data sheet on its special conveyor belt constructions has been issued by the B. F. Goodrich Co. The sheet features the Riffle Grip conveyor, which was designed to retain or separate water content from the load during belt travel on inclined conveyors. Also described are wire-inserted belts for foundry service, a turnable conveyor belt, belts with stepped plies, reinforced covers and flanges.

Where to get: B. F. Goodrich Co., Industrial Products Div., Akron, Ohio.

Subject: **Convertible Level**

Content: A four-page bulletin describes the redesigned Warren-Knight convertible level, the Model No. 40-F. The level was designed for use by architects, builders, carpenters, contractors, engineers or municipal officials. Ask for bulletin K.

Where to get: Warren-Knight Co., 136 N. 12th st., Philadelphia 7, Pa.

Subject: **Gradall Attachments**

Content: The line of attachments for the Gradall is described in an illustrated booklet issued by Warner & Swasey, *How to Beat Competitive Bidding with Gradall Attachments.* Illustrations show the attachments in use on jobs.

Where to get: Warner & Swasey Co., Gradall Div., Cleveland 3, Ohio.

Notes from the Manufacturers

Colorado Fuel and Iron Corp., Wickwire Spencer Steel Div., New York, N. Y. has appointed Louis A. Ringman as fabrications manager at the Claymont (Del.) plant. He was formerly vice president in charge of manufacturing for the Security Engineering Div. of Dresser Operations, Inc.

Cummins Engine Co., Inc., Columbus, Ind., has appointed B. C. Sears as regional manager of the Great Lakes region with headquarters at Cleveland, Ohio. Cummins has appointed Cummins Diesel Sales of Alaska, Inc., as a distributor for the entire territory of Alaska. R. B. Newell, former vice president of Cummins Diesel sales of Washington state, will be president of the Alaska distributorship.

Harnischfeger Corp., Milwaukee, Wis., has appointed J. F. Catalane as general sales manager of the P & H construction and mining division. Catalane also became a member of the Harnischfeger Corp. executive committee. He also will continue as sales manager of the power crane and shovel division. Robert P. Jones was appointed assistant general sales manager of the construction and mining division; Raymond A. Ehn was made assistant sales manager of the power crane and shovel division. The construction and mining division was recently organized.

"Never thought Pete had ambition to work in the excavation on his own time."

Hercules Powder Co., Wilmington, Del., has announced the election of George B. Baylis as assistant treasurer of the company. J. H. Tyler McConnell has been elected secretary to succeed Baylis. Dr. A. M. Ball, manager of the company's experiment station explosives research division, was transferred to the home office for assignment to special duties. Dr. Lyman G. Bonner, technical director at Allegany ballistics laboratory, succeeded Dr. Ball at the station as manager of explosives research. He also will serve as manager of the high pressure laboratory. Dr. C. Dana McKinney, Jr., will become technical director of the Allegany ballistics laboratory.

International Harvester Co., Chicago, Ill., has announced transfers and promotions among its motor truck division field sales executives. Barr Crawford, district manager at Pittsburgh, Pa., moved to St. Louis, Mo., in the same capacity, succeeding C. A. Samuelson, who retired. H. A. Herman, district manager at Fort Wayne, Ind., was transferred to Pittsburgh as district manager. M. J. Gowen, district manager at Richmond, Va., moved to the same position at Fort Wayne. R. W. Maxwell was made district manager at Richmond. He was formerly assistant district manager there. M. T. Sprague was named district manager at Oakland, Calif., to succeed Roy A. Legge, who retired. Sprague was formerly Portland (Ore.) district manager. G. S. Stewart, formerly Sprague's assistant, was made Portland district manager.

Iowa Manufacturing Co., Cedar Rapids, Iowa, has appointed four new sales representatives to represent the Cedarapids line of aggregate producing and bituminous mixing equipment. They are: Harry M. Ford, West

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Two Marion 480 electric shovels for power supply three phase 60 cycle 2300 volts located in the South, fair operating condition, also large inventory of unused spare parts, reasonable. For further information, contact: Box 3666

Locomotives, 5 to 115 tons, diesel, gas. Monighan Walker dragls., 9, 7, 5W, 200W. Cranes, draglines, shovels, 1½ to 23 yds. Placer dredges, 4½", 6", 12", 16"; & hydr. International batch dump trucks (25). Locomotive cranes, diesel, 30 & 25-ton. Diesel marine engines; gener. sets (6). Parsons 310 and 25 trench excavators. H. Y. Smith Company, 828 N. Broadway, Milwaukee 2, Wis.

Bucyrus-Erie 120-B shovel serial no. 37106 with two 5 yard dippers and spare long handle with 4 yard dipper; also includes about 2,000 feet power cable and a considerable quantity repair parts; good working condition; location State of Washington; price: $87,500. L. E. Dixon Company, 409 South California, San Gabriel, California.

Bucyrus-Erie model 150-B Ward Leonard electric shovel, pushbutton starting, separately driven exciter, Tri-Ten dipper handle, available with six cubic yard rock dipper or special seven cubic yard dipper; serial no. 101329; shipped August 1953; excellent condition; location: South Dakota. Box 3598

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

CATERPILLAR DW10 DIESEL TRACTOR AND ATHEY 15 CU. YD. CAPACITY SIDE DUMP WAGON COMBINATION: used only 1700 hours; priced for quick sale at less than half price. J. P. Waite Construction Co., 3308 West Pierce St., Milwaukee 15, Wisconsin, Phone: EVergreen 4-1900.

Lima 604, 1954 model; long and wide Cats; GMC 671 engine; 60' dragline, clamshell and dragshovel; ind. boom hoist, machine like new, used 1000 hours. Price $40,000. Located Detroit. Box 3676

Lorain dragline, model L820, serial #18673, 70' boom, 2 yd. bucket, Kohler light plant, excellent condition, priced for quick sale. A. J. Hanson Co., P.neville, La.

Six cubic yard dipper and Tri-Ten handle for Bucyrus-Erie 150-B Shovel; slightly used but in excellent condition. Box 3588

MISCELLANEOUS EQUIPMENT

New 18" dredging pump, rectangular cross section casing, high alloy steel liners, high alloy cast steel 4 vane runner; spare liners. Box 3587

FOR LEASE

20 Acres of limestone 15' overburden, 60 adjoining acres available. Harry Kretzer, Route 2, Lowellville, Ohio.

POSITION WANTED

Superintendent available. 30 years experience and qualifications covering hi-ways, airports, large sewers, water lines, heavy and light excavating; all types; know cost and modern equipment; sober, honest, and reliable; middle West or West. Box 3593

HELP WANTED

Experienced superintendent on heavy earth and rock excavation using modern type equipment; send resume of experience and references. Box 3675

If you are Buying or Selling Used Equipment this is the place to let the Excavating Industry know about it.

Franklin, N. H., appointed to the territory of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, northern New Jersey and metropolitan New York; C. E. (Charlie) Lutz, Pittsburgh, Pa., who will serve in Ohio, Indiana, Kentucky, western Pennsylvania and West Virginia; R. C. (Dick) Gregor, Salt Lake City, Utah, with a territory embracing Utah, Wyoming, Montana, Colorado and the Canadian provinces of Alberta and Saskatchewan; and K. F. (Ken) Hamilton, who was appointed to the domestic sales department.

Chain Belt Co., Construction Machinery Div., Milwaukee, Wis., has appointed Charles R. Angell, Jr., as western district sales manager with offices in San Francisco, Calif.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has announced a $1,800,000 expansion program for the shops and offices of its Cedar Rapids (Iowa) works, where the firm's motor scrapers and motor wagons are made. The expenditure includes amounts allotted for new buildings as well as for machine tools. Several hundred people will be added to the present work force when the program is completed early in 1956. Some new buildings will be erected and some old ones replaced.

Athey Products Corp., Peoria, Ill., has signed a licensing agreement with The Birtley Co., Ltd., Birtley, County Durham, England, permitting Birtley to manufacture Athey's rubber-tired and track-type trailers. Production at Birtley is expected to begin early next year.

Clark Equipment Co., Benton Harbor, Mich., has appointed Avery Trac-

tor, Inc., U. S. Highway 20, West Lebanon, N. Y., to sell and service the Michigan line of tractor shovels and excavator cranes. The distributor will serve the entire state of Vermont from a recently established office at Montpelier.

Huber-Warco Co., Marion, Ohio, has announced the appointment of the Mitchell Distributing Co. as the distributor of its complete line of tandem rollers, three-wheel rollers and graders in the state of North Carolina. Headquarters of Mitchell Distributing are located in Spruce Pine, N. C., and the firm also maintains a branch office at 5405 Hillsboro Street Extension in Raleigh.

LeTourneau - Westinghouse Co., Peoria, Ill., has appointed Jack Mc Cann as government sales manager. He had been manager of the company's Washington (D. C.) office. Jack Errion was named sales promotion manager. E. L. (John) Cline was named Central sales manager and John Herrick was appointed Western service manager. Both formerly were with the J. D. Adams Co. at Indianapolis, Ind. The firm has appointed the G. C. Phillips Tractor Co., Inc., 4419 First Ave., N. Birmingham, Ala., as a distributor for LeTourneau-Westinghouse and Adams products in northern Alabama.

Mack Trucks, Inc., New York, N. Y., has concluded a three-year $80 million revolving credit agreement with a group of 48 banks. It provides for financing customer installment paper and other receivables covering every conceivable type of Mack transaction; for sales of new trucks and buses; sales of used equipment, and some foreign sales. Under the agreement, Mack will repurchase customer installment accounts in the amount of $45 million previously sold under its former bank purchase arrangement. It also will retire the balance of $8,200,000 currently outstanding against its 4% long-term loan originally contracted in 1951 for $10 million; prepay outstanding unsecured notes of $5 million; pay off a short-term bank loan of $2 million currently owed by its Canadian subsidiary. These steps will be financed from proceeds of the initial borrowing of $63,500,000.

Ottawa Steel, Inc., Ottawa, Kan., manufacturer of roadbuilding and industrial construction machinery, has been purchased by the L. A. Young Spring & Wire Corp., Detroit, Mich. Young Spring & Wire manufacturers related wire products and is a major automotive parts supplier.

Rogers Brothers Corp., Albion, Pa., recently celebrated its 50th anniversary with an open house at the plant and a banquet at the Kahkwa Club at Erie, Pa. The firm manufactures low bed, heavy duty trailers.

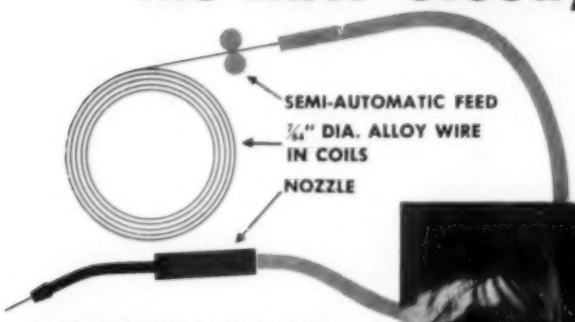
Sherman Products, Inc., Royal Oak, Mich., has named Warren E. Henderson as Cleveland (Ohio) zone manager. Henderson's sales and service zone includes Ohio, West Virginia, western Pennsylvania and lower Michigan.

Texas Portland Cement Co., Austin, Tex., has announced the election of Kent Diehl, Sr., Houston, Tex., as president of its new plant at Echo, near Orange, Tex. Diehl will engineer and supervise the construction of the $3 million plant which will have a capacity of 1,500 bbls. a day. Diehl was formerly president and general manager of the Gulf Portland Cement Corp., Houston. He has supervised and engineered portland cement plants all over the world.

Textron American, Inc., Providence, R. I., has announced the purchase of the Homelite Corp., Port Chester, N. Y., manufacturers of chain saws, generators, blowers and pumps. Homelite will be an independently operated subsidiary of Textron American.

Timken Roller Bearing Co., Canton, Ohio, has promoted three men. E. H. Hughes, manager of the sales order department, was named to the newly created post of assistant to the sales director. J. L. Brown was made assistant manager of the sales order department and Don M. Brown was promoted to the position of manager of the allocations department.

SEMI-AUTOMATIC HARD-FACING with the NEW Stoody Alloy Tubular Wires



- bare wire... no flux
- complete visibility
- three times manual speed
- enormous savings in labor

IN EARTH-WORKING AND CRUSHING OPERATIONS

This is a totally new hard-facing method utilizing the welding speed of the semi-automatic machine to produce sound deposits of wear-resistant alloys. The wires run bare, using no flux, so that the weldor enjoys full visibility at all times... deposition rates at normal welding currents (200 to 300 amps) are double or triple those of the manual method... standard semi-automatic equipment is easily converted to handle Stoody wires.

Maintenance time and welding costs are reduced through increased service life provided by Stoody alloys and the greatly increased welding speed. Weldors like the semi-automatic, find it easy to operate with less fatigue.

Your Stoody dealer (check the "yellow pages" of your phone book) will be glad to give you full information, plus a demonstration on your own equipment without obligation. Or write to the company for literature and the name of your nearest dealer.

STOODY COMPANY
11948 East Slauson Avenue
Whittier, California

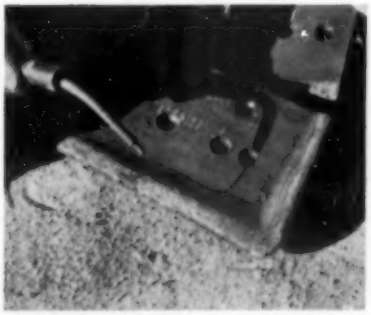
SHOVEL BUCKETS: TEETH, LIPS, ADAPTERS, ETC., *Stoody 121 gives good wear resistance, quickly covers wearing areas on this clamshell and other types of buckets.*

ALL TYPES OF CRUSHERS: *An ideal application for Stoody 100 because of excellent wear resistance and impact strength. Rolls can be hard-faced much faster with semi-automatic welder.*

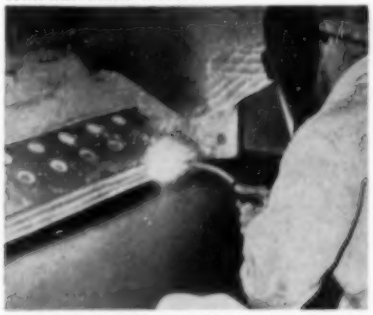
Stoody 100... a high chromium alloy wire for equipment subject to severe abrasion and impact. This is similar to Coated Tube Stoodite. Used on crushers, buckets, rippers, augers, tool joints. Deposits 10 to 18 pounds per hour.

Stoody 121... a medium alloy material with excellent resistance to abrasion and impact. This is similar to Stoody 21. For bucket teeth, shovels, grizzlies, loader lips, crushers. Deposits 9 to 16 pounds per hour.

Stoody Nickel Manganese... produces a Hadfield manganese deposit for build-up of all manganese parts—crushers, buckets, shovels, teeth—preparatory to hard-facing. Deposits 4 to 7 pounds per hour.

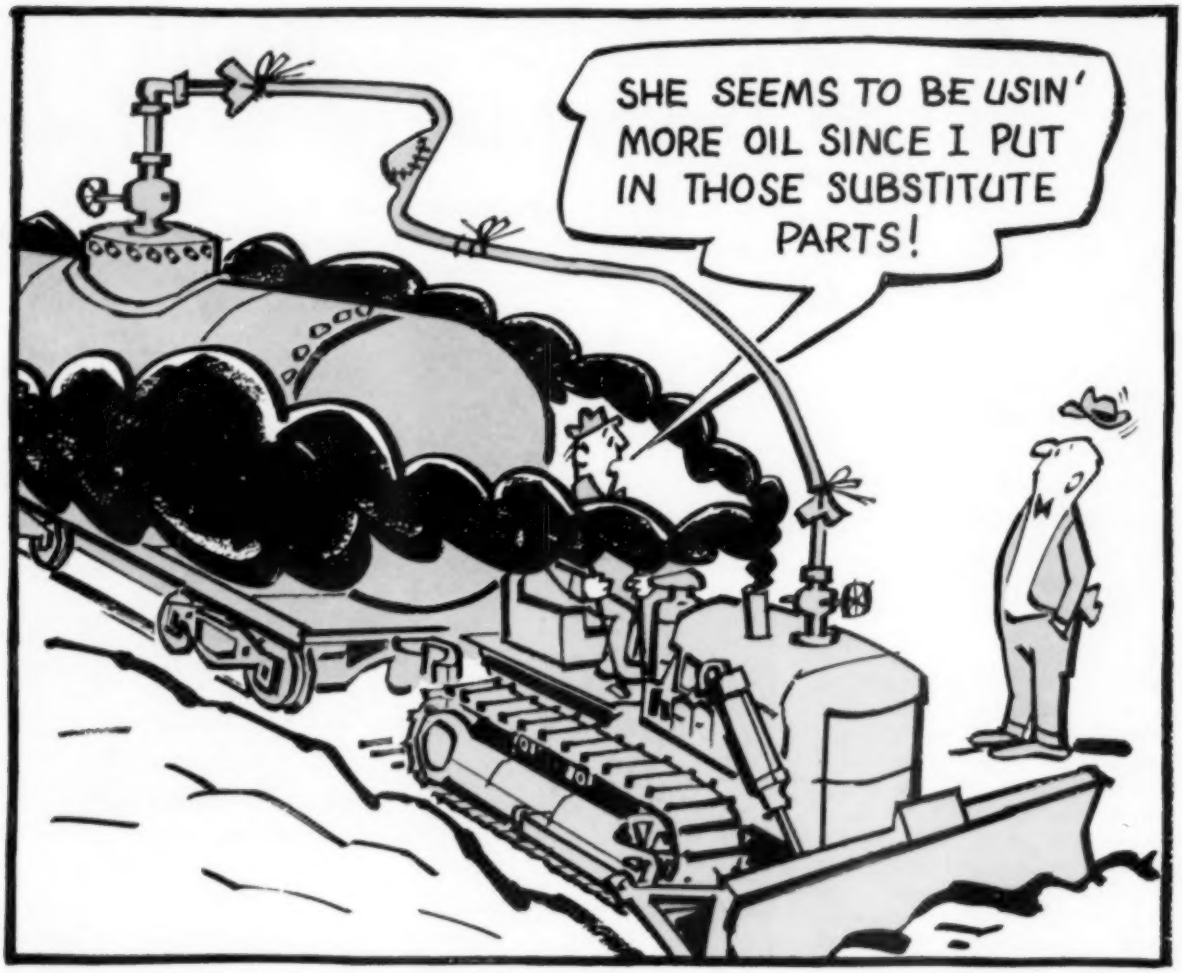


BULLDOZER END BITS: *Can be hard-faced in one third of time required by manual process. Stoody 121 is recommended.*



SCRAPER BLADES: *Parallel beads of Stoody 121 are fast and easy to apply to scraper blades, add excellent wear resistance.*

SHOVEL TRACK PADS: *Use of Stoody Manganese applied by semi-automatic welder cuts time on maintenance.*



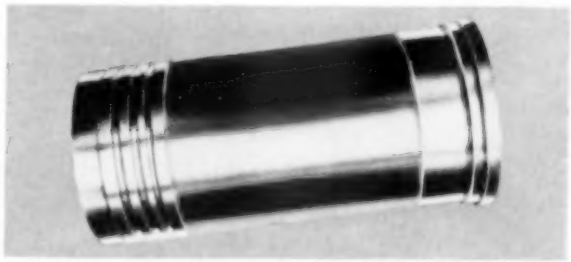
Chances are you'll never need to hook on a tank car to avoid down time. Chances are you *will* have to do something about cylinder liners at one time or other, though.

If you replace with a Caterpillar-built liner, you're sure of a liner made of a special nickel-molybdenum-chrome alloy that's tougher and stronger than steel, more resistant to heat and abrasion. You're sure of controlled induction hardening that makes bare surfaces highly resistant to wear, and of bores chemically treated for easier break-in —better seating of rings. You're sure of precision machining for smoothness, roundness and straightness the full length of the liner.

If you replace with a non-genuine liner, can you be sure of anything?

Better get Caterpillar parts every time.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



This is a genuine CAT® cylinder liner. As many as 14 different inspections guarantee its composition, strength and hardness.

CATERPILLAR*

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